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Honey Column.

CITY MARKETS.

PHILADELPHIA.—Market very dull here now; some few sales at reduced price. Fancy comb, 13c; No. 1 comb, 11; amber, 8; extracted, 6 for white, and 4 to 5 for darker grades; beeswax advanced to 28.

WM. A. SELSER,
Dec. 23. 10 Vine St., Philadelphia, Pa.

MINNEAPOLIS.—Fancy white-clover comb, 12; No. 1, 11; dark, 10@10¼; extracted white clover, 6; amber, 5½; dark, 5. Good demand for extracted if quality is of the best.

S. H. HALL & Co.,
Dec. 23. Minneapolis, Minn.

DENVER.—The demand for both comb and extracted honey has somewhat improved, but it is mainly owing to the holiday season. We can quote No. 1 white comb honey at 10; No. 1 white extracted, 6. We are having a fairly good demand for extracted.

R. K. & J. C. FRISBEE,
Dec. 23. Lockbox 1014, Denver, Col.

BOSTON.—Fancy white, 13; No. 1 white, 11@12; fancy amber, 10; No. 1 amber 9; white, extracted, 6@7; amber, 5@5½; beeswax, 27. The demand is good and supply light. What is now needed is strictly No. 1 white honey and pure beeswax. These will meet a ready sale.

BLAKE, SCOTT & LEE,
Dec. 20. Boston, Mass.

COLUMBUS.—A good demand exists for white comb honey, and fancy stock is having the preference at 13. Good No. 1 sells at 11@12, and No. 2 at 9@10. Can use some amber, which will probably bring 8@8½.

THE COLUMBUS COMMISSION & STORAGE CO.,
Dec. 21. 409–413 N. High St., Columbus, O.

CHICAGO.—The demand for comb honey has been unusually light during the month of December, and sales have been made of the best grades of white at 11c, and those not desirable in appearance at 9@10; amber and dark ranging 7@9; extracted white, 5@6; amber, 4@5; dark, 4; beeswax, 26@27, and in good demand.

R. A. BURNETT & Co.,
Dec. 21. 163 South Water St., Chicago, Ill.

CINCINNATI.—There is no change in prices, but a rather slow demand for the holiday season. We quote 10@14 as the range of prices for best white comb honey in the jobbing way, and 3½@6 for extracted honey. Supply is fair. There is a fair demand for beeswax at 20@25 for good to choice yellow, with a fair supply.

CHAS. F. MUTH & SON,
Dec. 22. Cincinnati, O.

CLEVELAND.—We quote selling as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6. Beeswax, 28.

A. B. WILLIAMS & Co.,
Dec. 22. 80-82 Broadway, Cleveland, Ohio.

KANSAS CITY.—The receipts of extracted honey more liberal, market only fair at 4½@5½; fancy white, 1-lb. comb, 10½@11; No. 1 white, 1-lb. comb, 10; No. 1 amber comb, 9@9½. Beeswax, 20@22.

24. C. C. CLEMONS & Co.,
Dec. 22. Kansas City, Mo.

ALBANY.—The market quiet on comb honey, as is generally the case after the holidays, and prices not well sustained. We quote fancy white 11@12; fair to good, 9@10; mixed, 8@9; buckwheat, 7@8; extracted in light supply; white, 5@6; dark, 4½@5.

CHAS. MCCULLOCH & Co.,
Dec. 22. Albany, N. Y.

MILWAUKEE.–At this date the demand for honey is not very good. Think the attention of the trading people is attracted more by the fanciful than the practical. However, we know that they will come back after a few days. Supply good, and we can quote No. 1 white, 1-lb. sections, 10@12; No. 2 white, 1-lb. sections, 9@10; No. 1 dark 1-lb. sections, 8@9; extracted in bbls., kegs, and pails, white, 5½@6; extracted in bbls., kegs, and pails, dark, 4½@5. Beeswax, 25@27.

A. V. BISHOP & Co.,
Dec. 22. Milwaukee, Wis.

NEW YORK.—Our market remains quiet. Fancy grades of white comb are about cleaned up, and same would find ready sale at quotations. We have a large stock of buckwheat, mixed and off grades white, and, as the demand for these is very light, we can not encourage further shipments for these for the near future. Extracted is selling fairly well, all kinds. We quote: Comb, fancy white, 11@11½; off grades, 9@10; buckwheat and mixed, 6½@7; extracted, California white, 5@5½; light amber, 4½@4¾; white clover and basswood, 5@5¼; buckwheat, 4@4½; southern, 50c per gallon. Beeswax in good demand at from 26@27.

HILDRETH BROS. & SEGELKEN,
Dec. 22. 120-122 W. Broadway, New York.

DETROIT.—White comb, 11@12; other grades, 8@10. Supply equal to demand. Extracted, light; 5@6; dark, 4@5. Beeswax in good demand at 25@26.

Dec. 27. M. H. HUNT, Bell Branch, Mich.

FOR SALE.—Buckwheat comb honey, at 7 and 8c per lb. Extracted at 4c in 160-lb. kegs, f. o. b. cars.
N. L. STEVENS, Venice, Cayuga Co. N. Y.

FOR SALE.—Pure honey.—Clover, extracted, 6½ cts. per lb.
I. J. STRINGHAM, 105 Park Place, N. Y. City

FOR SALE.—Extracted clover at 6 cents.
M. ISBELL, Norwich, Conn.

FOR SALE.—Cheap, 25 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

WANTED.—To buy quantity lots of fancy comb and gilt-edged extracted honey. B. WALKER,
Evart, Mich., or 211½ E. Chicago Ave., Chicago.

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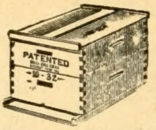

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THEODORE BENDER, Canton, O.

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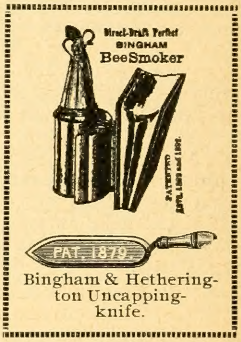
January 27, 1897. ruly, W. H. EAGERTY, Cuba, Kansas.



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Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio.

Vol. XXVI. JAN. 1, 1898. No. 1.

STRAY STRAWS

FROM DR. C. C. MILLER.

A WRITER in *British Bee Journal* objects to calling a virgin queen a princess; says it is a misnomer, and although credited to England is seldom used there.

R. C. AIKIN is an interesting and instructive writer about bees, and I'll be glad when he gets through with irrigation, rivers, alkali, and things, and gets down to bee-talk.

"MR. SUPPLY-DEALER, shuffle off the inset section," is the advice of Somnambulist, in *Progressive*, after considering the no-bee-way section. [That is just what The A. I. Root Co. is doing just as fast as it can.—ED.]

SPEAKING OF PUMPKINS, A. I. Root says, p. 895, "I have, during the past two or three months, paid 5 cts. apiece for every load that I have seen brought into our town." They're higher here. $1.00 to $2.00 a load is the lowest.

R. C. AIKIN has commenced in *Progressive* what promises to be a serial autobiography, so far as his apistical experience and experiments go. It ought to be interesting, for, whatever else R. C. may do or not do, he's not given to staying in ruts.

ABOUT 12 KILOGRAMS (26.4 lbs.) is what Th. Weippl, editor Vienna *Bienen-Vater*, considers a proper allowance of winter stores for a colony from Oct. 1 to May 1. It may get through with less, but this will so hinder development that the saving will cost heavily in the next crop.

SEEING THE PICTURE of the junior Coggshall, p. 880, reminds me. At Buffalo I noticed his father introduced the boy to strangers just as if he had been a man. I liked W. L. before, but I liked him a good deal better after that. I don't believe boys were made merely to be snubbed.

FORTY ACRES OF BUCKWHEAT three miles away from W. Z. Hutchinson bloomed two or three weeks early, and his bees stored very slowly. Then buckwheat close by bloomed, and combs were filled with a rush. He thinks distance made the difference. But buckwheat doesn't always yield, W. Z., and will it yield ahead of its usual season?

HUTCHINSON put his bees in cellar Nov. 22. My 295 were put in on that and the two following days. Michigan and Illinois weather not so far apart. I had zero weather within a week. Hutchinson brought home two colonies from two miles out in the country, and put them in cellar without a fly. If those two come through as well as the rest, I'm no good guesser.

I'M SORRY to see you hint, Bro. A. I., p. 898, that family worship and blessing at table are going out of fashion. Some old fashions are hard to improve. Here's an old Scotch grace that's good:

Some hae meat and canna eat,
  And some hae nane and want it:
But we hae meat and we can eat,
  And sae the Lord be thankit.

NO-BEE-WAY SECTIONS can be made by using the usual inset section with plain separator, says S. Brautigam, in *Progressive.* Make a kerf $\frac{1}{16}$ or $\frac{3}{32}$ deep, say $\frac{1}{8}$ inch from the edge on the outside of the section, then split off with a knife when the section is filled. Would do, but would take extra time just when one is most hurried, and wouldn't be a very smooth job.

W. F. MARKS makes a good nomination, p. 893; but, Bro. Marks, why didn't you nominate before? The ballots were cast before your nomination saw the light. Now, if you'll start the thing next October, and nominate an entirely new set of directors, I'll help you all I can. [It was a little late, it is true; but GLEANINGS was out before my ballot was cast, and I hoped it might catch most of the other members.—ED.]

MANY seem to get Weed process and drawn foundation mixed. The *British Bee Journal* speaks of bee-keepers being much interested in "the new drawn-out 'Weed' foundation." If I understand correctly, the Weed process means the manner of sheeting, and after sheeted it may be made into drawn foundation or not. Drawn foundation is that with deep cells, whether the Weed process of sheeting has been used or not. Is that straight? [You are orthodox, doctor, on this point, even if you are not on the question of selling sections for less than a pound in weight.—ED.]

SHAMROCK, according to a lively discussion in *British Bee Journal*, may be a honey-plant or not; and just what shamrock is, seems mixed. As nearly as I can make out after weighing all the evidence, the true shamrock seems to be *Trifosella-acetagolupulis-oxalina-prorepepsolium*, depending somewhat upon "locality."

WHEN ACETYLENE LIGHT was mentioned in GLEANINGS I felt enthusiastic about it. When I read in *Cosmopolitan* how explosive it was, I folded up my enthusiasm and put it away with moth-balls. After reading GLEANINGS, page 901, I got out my enthusiasm, smoothed out the creases, and now I'm waiting for A. I. Root to tell me what lamp to get.

HERE'S AN ITEM may please A. I. Root. The young people of Marengo got up a petition which induced the city fathers to pass a law forbidding the selling or giving away cigarettes, not merely to boys — the State law forbids that—but to anybody. [That is quite an idea. It might not be a bad idea to try it on in this town. We will see. I firmly believe that cigarette-smoking on the part of boys is more harmful than the use of whisky and beer, bad as they are.—ED.]

THE *British Bee Journal* favors the use of sections with split tops to receive the foundation. I wonder if this can be the same split top abandoned some years ago on this side. If I am not mistaken, split tops are also used in France. [We make a good many split-top sections, but they are almost wholly for the English trade. I believe, however, if some of our cousins across the big pond would once learn the knack of putting foundation into sections by the heated-plate method they would throw away the split-top sections just as we have done.—ED.]

THREE HUNDRED AND THIRTY-FOUR pounds of honey was extracted from a single hive in England the past season by Lancelot Quayle. The *British Bee Journal* regards this as probably the largest ever taken in the kingdom. [It is hardly fair to crow over our British cousins; but some years ago a record of 700 lbs. was reported from Texas, but it was discredited by a good many prominent bee-keepers. We do know, however, that two or three *leading* bee-keepers did secure as much as 450 or 500 lbs. each from a single colony and its increase.—ED.]

TALK ABOUT two of us getting 17,000 pounds honey with little help. Hutchinson's neighbor, Koeppen, beats that all hollow. He ran five apiaries and took 12,000 lbs. comb honey, and did all the work his lee-lone self except one man's help about a week. [I am not sure that friend K. beat you "all hollow," after all. If I am correct, your 17,000 lbs. of honey was all produced from two apiaries—certainly not from more than three—call it three. Now, 17,000 lbs. from three apiaries is a better record than 12,000 lbs. from five apiaries. Then you do not know how much overtime Mr. K. put in.—ED.]

NEW BEGINNERS are often spoken of in bee-keeping. Mightn't we just as well save the wear and tear of that word "new"? [Yes, it is so easy to stick in that word "new" when it is not needed. We have tried hard to keep out the combination from our columns — at least in our own writing. If any one had asked me the question point blank I should have said that the term "new beginner" could not be found in our pages; but since you have seen fit to bring up the matter in a Straw, I have been wondering if you did not have reference to us. Now, doctor, point out the (*guilty* (?)) culprit.—ED.]

THE THOUGHT that the cross-cleats were the only parts of the fence separators that would need cleaning quite pleased me till I remembered that just the same place in the old separator is all that's to be cleaned; and as that's a plane surface it's easier to clean the old separator. [But, doctor, you can scrape the propolis off the cross-cleats easier, because the knife runs *with the grain* of the wood, than you can across the face of plain separators where the knife has to go *across the grain*. It is true, you may run the knife with the grain, but then you would have to scrape practically the *whole surface* of the separator. —ED.]

THOSE ARE GOOD PAPERS you mention for Sunday reading, p. 899, Bro. Root, but *Golden Rule* is a little behind the times. Better get *Christian Endeavor World* and keep up with the procession. [My two favorite papers are the New York *Independent* and the *Outlook*. They are both independent papers, give accurately all the news that is important to know, from a Christian standpoint; but neither the papers that A. I. R. mentioned, nor those that I have named above, are the only good ones, I am glad to say. There are hundreds of others that are most excellent. There is scarcely a paper among the orthodox sects that is not good.—ED.]

L. STACHELHAUSEN says, in *Southland Queen*, that bees sometimes use old wax to build comb with, but only when they can not secrete wax. I think, friend S., you'll find they'll use old wax right in the height of wax secretion, *if they don't have to carry it far*. Formerly, when I put a frame of brood between two wide frames of sections I invariably found black wax in the sealing of the sections unless I moved the sections before sealing. That's a reason for thick top-bars, so the bees will not carry up black wax. [If I am correct, doctor, we once had an argument on this same question; but for the life of me I can not now remember whether you are now on my side of the fence or I on yours.—ED.]

PUTTING BLOCKS under the corners of a hive is troublesome, as you say, Mr. Editor, and, worse than that, it's extremely aggravating to have a hive occasionally tumble off the blocks; but a big entrance won't begin to give the free air that a blocked hive has. Possibly there might be fixed blocks at the corners, with removable strips at sides and back. [Perhaps you are right; but methinks that, in the majority of instances, an entrance ⅞ inch deep, and the whole width of the hive, would be large enough. But if that entrance be not large enough, there is nothing to prevent using blocks even then. Did you ever use an entrance ⅞ inch deep through the season? We expect to change all our bottom-boards next season by nailing on a rim ½ inch thick.—ED.]

HASTY doesn't relish honey as keenly as 20 years ago, but has a growing appetite for half a pound at a sitting. Thinks it a "pestilent idea" that it isn't good form to eat any more honey at table than one would politely eat of butter, and that honey ought to be regarded "as a thing to be sailed into for all one's appetite calls for, like bread or potatoes." He says bee-keepers bolster up the homeopathic style of eating by selling very small packages, and by the inflated prices put upon these little morsels. [I am selfish enough to hope friend Hasty is right; but I am almost positive I could not eat half a pound of honey at a meal day after day. I might do it, perhaps, two or three times running. If any one can beat friend Hasty in eating honey, I hope he will hold up his hands.—ED.]

I'M PUZZLED to know why there should be so much difference about large entrances inducing robbing. Some say raising hives on blocks is too great a temptation to robbers. Lots of my hives are hoisted ¾ to an inch, and never a case of robbing. In the fall, just when robbers are worst, entrances are all 12x2. Never a hive is robbed if it's all right *inside;* and if it isn't, contracting the entrance won't save it. [Yes, indeed. If a colony is strong enough to be of any service it is strong enough to defend itself against robbers, even with a wide entrance. But assuming that bees have a better chance to rob with large entrances, there is no law to prevent reducing the size of such an entrance to a point where robbers would not stand much of a show; but if, on the other hand, the hive has a small entrance, and the colony is overpopulous (or, perhaps I had better say, just in the right trim for working in the sections), there is no power on earth that can enlarge the entrance without prying the bottom-board off or mutilating the hive. —ED.]

Ridge-Pole Musings

The Trip Back Home; Foul Brood a Slow-working Disease.

BY R. C. AIKIN.

We arrived in Lincoln in time to attend the convention. I took a keen interest in the work of that meeting, and particularly in the organizing of the United States Bee-keepers' Union. I am yet very much interested in it, and will later have somewhat to say in regard to it.

From Lincoln we again went eastward, crossing the "Big Muddy" at Nebraska City. There is some fine country between Lincoln and the river. We saw a few hives here and there along the route, but did not come in contact with any apiarists. We had an invitation to visit with a Mr. J. H. Stephens, at Riverton, Iowa. Mr. Stephens lives a few miles off the Missouri bottoms, in the bluffs. Just as we left Lincoln it began to rain on us, so we had some mud as we drove to the home of Mr. Stephens, and it was in the gumbo soil on the Missouri bottom that we stuck in the mud for the first time on the trip. I have no doubt that we could have pulled through the mud-hole, but Bill horse put a front foot into a rut and then set the hind foot on top of it, and so threw himself. I quickly loosed him from the wagon and other horse, when he scrambled to his feet, seeming none the worse for the trouble. I then laid down the fence by the roadside, and, with picket-ropes, hitched to the end of the tongue; but Bill pulled once to find that the wagon stuck, then refused to do any more. A passing team, however, pulled us out, and we went on rejoicing, and were soon at the hospitable home of Mr. Stephens. He has an eighty-acre farm and a nice home, lying in a little valley surrounded by timber and hills. He certainly has a fine location for bees. He had less than 50 colonies, but said they were more profitable than his farm. He is also interested in thoroughbred swine.

From here we passed on about a day's drive, and pulled up where the Muser spent his boyhood days. I drove directly to my old home, and stopped on the farm where I spent over twenty years of the prime of my life. It was there I began my bee-keeping career over twenty years ago. I think it was about the year 1874, probably, that I started with one colony, and then, before I was yet 21 years of age, I chose apiculture as my life business, and began the study of it with a view to keeping abreast if not ahead of the times.

It was while under the parental roof that some of the most bitter experiences of my life came upon me. It was there that I was taught, by bitter sorrow, that "whom the Lord loveth he chasteneth," and from there, through financial reverses, my aged father and mother went out homeless and penniless. To-day others reap the harvest from the planting by the fingers that pencil these words. It was on that old farm where I learned some of the first and best apicultural lessons of my life, and where I made the greatest honey-yield of my life, 227 pounds surplus per colony, spring count, and increased from 11 to 28. The seasons have since changed, however, and for the past few years but little honey has been produced, and many bees have perished.

I want to relate a little foul-brood experience. It was on our journey that I met with it. At one place we called on a bee-keeper who was well read in regard to the pursuit. It was his practice, however, to allow his bees to swarm, and never to open the brood-chamber. He said the bees had been robbing two colonies, and it seemed as though he could not stop them. As we looked through the yard

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he pointed out the robbed hives in front of which he had piled straw. The bees were not then flying, so I just pulled the cover off the nearest one and put my nose over the hive. As the odor was suspicious I pulled off the super (empty) and pulled up a central frame, which was about half full of foul brood. The disease had progressed so far that the colony was nearly all dead, and the stronger colonies in the yard were carrying out the honey. An examination of the yard showed about a third of it badly diseased—possibly all of it infected. I witnessed the burning of a portion of the worst colonies. The owner has since informed me that he burned more of them after I left. He had no suspicion of foul brood, yet my own experience with it leads me to believe that it must have been in his yard at least two years. Some, no doubt, open hives too much ; but while I look forward to the time when I shall handle frames very little, still I would have hives in such shape that no disease could progress far without being discovered.

Mr. J. L. Strong, of Clarinda, Iowa, a specialist who has been in the business there for many years, showed me the first foul brood I ever saw. I think that was as much as fifteen years ago. He never destroyed a colony on account of it. He always cut out any cell in which it appeared, and never let it make any headway. He told me last winter that it disappeared in a year or two, and has never since reappeared.

While speaking of foul brood I may say something of my experience with it. In January, 1894, I purchased an apiary that was diseased. The former owner had transferred some combs, and used them in the extracting-super. These combs had the very first beginning of foul brood in them. In this way he introduced the disease to a nice apiary, and at the end of two years—the time I purchased the stock—I think it was four colonies that were pretty badly diseased, two of them very bad. The first year I had them, four more colonies developed it. The second year, two ; the third year, one ; while the fourth year (1897) none showed disease.

During this experience I have watched it very closely ; and, so far as it goes, I am led to believe that the disease does not progress very rapidly at first. I should expect, where slight contagion has been introduced, say in the fall or early spring, that the colony infected might live over that summer, possibly to die the next spring and be robbed out, and so communicate the disease to a number of other colonies in the yard. At this rate, about three years from the introduction of the disease would practically finish an apiary if it were not looked after. Possibly it may develop more rapidly at times ; but this is my observation in one of my own apiaries, covering a term of four seasons, every colony thoroughly inspected from four to six times each season.

If this is the ordinary way with the disease, surely it is not so much to be dreaded by the practical apiarists so long as the disease can spread only from the contagion in one's own apiary. If, however, a neighbor allows a few colonies to become thoroughly rotten, and my bees do a wholesale robbing, and bring that honey and distribute it through my apiaries, then I should expect one summer to badly infect almost an entire apiary. These points are still further corroborated by a limited experience as foul-brood inspector of our county, and by testimony of other county inspectors in this State.

Now to return to the account of our trip.

After reaching the old home where I lived for twenty-eight years we spent about two months in visiting with old neighbors. We also at one time decided to locate there. As the weeks of visiting brought us near the holidays and the approach of downright winter, we decided to winter there. It was there, in our little rented rooms with our sheet-iron camp stove as heater and cook-stove, that the former musings were written and placed in the hands of the editor of GLEANINGS.

As our plans failed to work to our satisfaction we did not locate after all ; and as soon as the roads would permit in the spring we headed toward Colorado and home. We placed a stove in the back end of our wagon, and on March 19th we pulled out of Page Co., Iowa, and after about five weeks of traveling and visiting we again landed in Loveland the the latter part of April, after an absence of about eight months.

We crossed the great Missouri River shortly before she went out of her banks in the great spring floods. The homeward trip was made just about as direct as we could do so. The trip was uneventful, save that it snowed or rained about once or twice a week, and so of course we had much mud. We also narrowly escaped a small cyclone in Nebraska. The storm-center was a number of miles from us, though we experienced a heavy wind and much rain for a few minutes. We were fortunate in that the heaviest storms always missed us, and nowhere did we encounter floods.

We visited but one bee-keeper on the homeward journey—Mr. J. B. Dann, of Dewitt, Neb. Mr. and Mrs. Dann and family entertained us very nicely over Sunday. The Dann apiary, of about 70 colonies, was about the neatest and best-kept apiary we found on our trip. If I remember rightly, Mr. Dann told me he had a contract with his wife, that, if he produced the honey, she was to sell it. She took orders and delivered honey, both at home and in neighboring towns.

In closing this rather disjointed narrative of our trip, let me tell of the wonderful piles of corn we saw. Southwest Iowa, Southeast Nebraska, Northwest Missouri, and Northeast Kansas is probably not excelled anywhere in the United States as a corn country. We passed through some villages where the corn-cribs full of corn covered more ground than all the other buildings. Of course, this was not the rule by any means, yet there were millions upon millions of bushels of corn stored in Eastern Nebraska.

Now, friends, we are settled again in our Colorado home. Wife's health is much improved—better than for two years, and we have decided to remain here. I have been making many observations of various things in apicultural lines; and if the editor does not choke me off I will try to tell you of them during the months to come.

Loveland, Col.

* * *

SPOILING THE MARKET.

Not the "Farmer Bee-keeper," but the "Professional" Bee-keeper and the Glucose-mixer the Spoiler of Markets.

BY EMERSON TAYLOR ABBOTT.

It is getting to be quite the fashion now for some one to rail about the "farmer bee-keepers" in the bee-journals; about having the market "spoiled," etc. How prone we are to try to shift the responsibility of our failures on to the shoulders of others, just as though a poor article, or one badly handled, could spoil the sale of a first-class article in the hands of a good salesman! It is not the farmer with his pure honey put up in bad shape, improperly cared for in every way, and unattractive, who spoils the market, but the slick salesman of the mixer, with his adulterated goods put up in the most attractive form. This is what beats down the market price of a first-class article of extracted honey, and this indirectly affects the market price of all honey.

Then there is the so-called "professional" honey-producer, with his large crop, much of which he might dispose of in his own home market if he only would, or if he knew how. Instead of this he ships his entire crop to some large city, perhaps follows it up, and, when he finds the market full of honey, cuts the price a few cents under the home dealers, just to close his crop out, and then goes home and writes for his favorite bee-journal a railing article about the "shiftless farmer bee keepers spoiling the market."

If he does not go to market himself, he consigns his crop to some commission man without ever asking if the market may not be already overstocked. After repeated efforts to sell, the commission merchant who, perhaps, knows but little about honey as to quality or the amount produced in the country, gets anxious for his commission, and so cuts loose and throws the honey upon the market for whatever it will bring. When our professional gets his returns he adds another name to the string of his condemnation, and rails about both the commission man and the farmer-bee-keeper, one of whom has "spoiled his market" and the other has "robbed" him of his hard earnings. He never stops to think that perhaps he has had something to do with "spoiling the market," and that he has robbed himself by a lack of proper judgment as to where and how to market his honey.

It seems to me that these people who have so much to say about the farmer bee-keeper spoiling the market lose sight of the first elements of success. Does any one suppose that Edison ever complained about the little fry "spoiling the market" for the products of his laboratory? or a Nordica about the amateurs "spoiling" the people's taste for good singing? Not by any means! They are not catering to that class of trade.

A poor article set up by the side of one that is first class always makes the good one show off better. We form our judgments largely by contrasting one thing with another. If I wanted to rail about any one spoiling the market in our city I would lay the accusation at the door of some professional Colorado bee-keeper who did not know any better than to *consign* his honey to one of our commission merchants who otherwise would have bought of *me* for *cash*. The market of this city has been spoiled more by so-called "professionals" than it ever has been by "farmers." A gentleman who had much to say at Buffalo about "farmer bee-keepers" spoiling his market did as much as any man I know of to spoil this market last year.

Then if all that is said by these writers is actually true, and farmers do spoil the market, what are these gentlemen going to do about it? Did any one ever reform a man by railing at him? Not much! Has not a farmer a right to keep bees and sell honey, if he feels so inclined? Well, I should say he had, and who will prevent him? You may be able to teach a farmer a "more excellent way;" but if you undertake to *drive* him from the market he may "buck," as they say "out west."

I would suggest that we stop trying to get a corkscrew cinch on the market, and go to work to see if we can not produce a little better honey than any of our neighbors, and then sell it at home, or as near home as we can.

St. Joseph, Mo., Dec. 1.

* * *

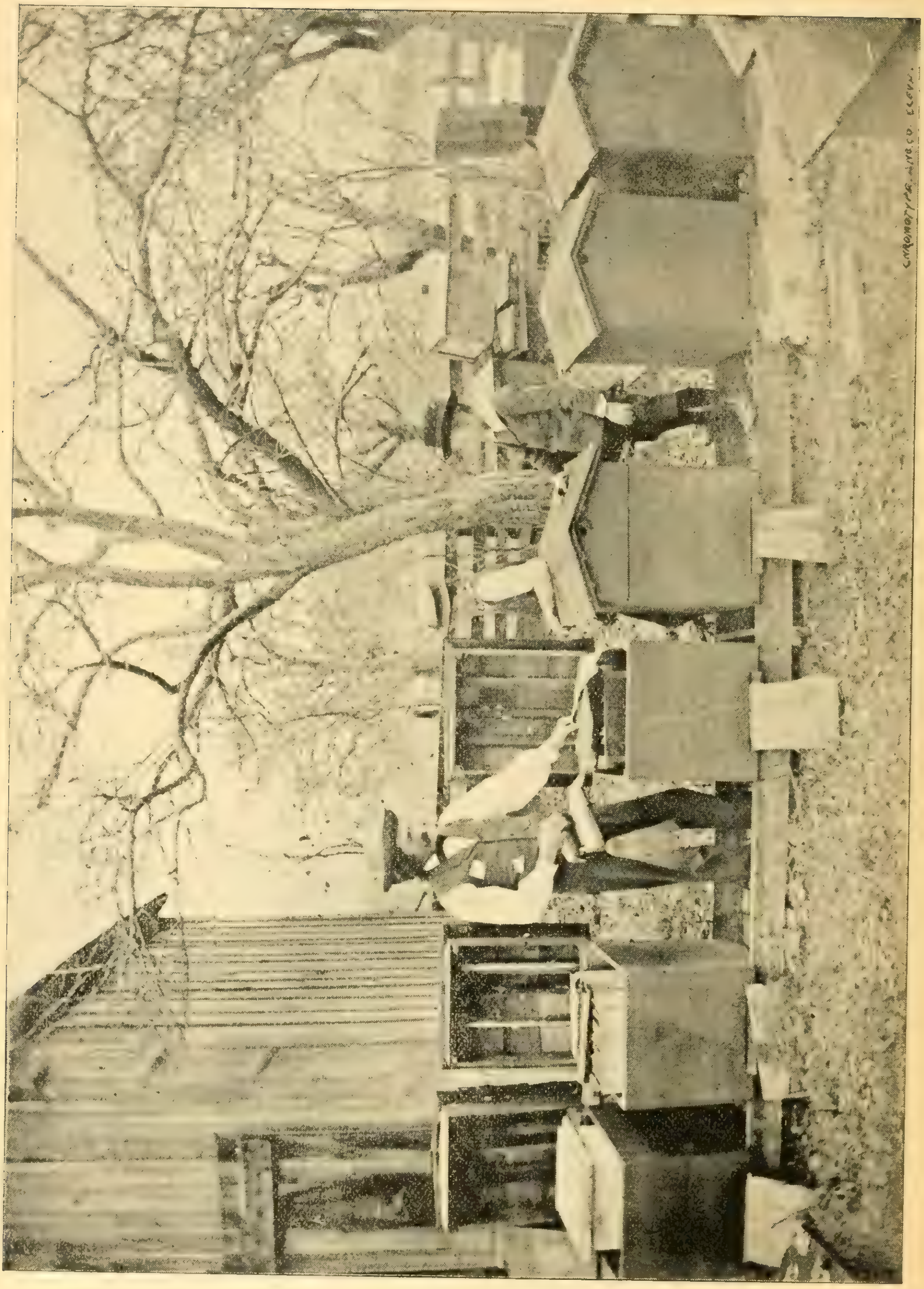
BROOD-FRAMES—SHORT PROJECTIONS.

A Friendly Growl at The A. I. Root Co.

BY CHARLES MITCHELL.

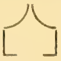
Dr. Miller:—I have concluded to write you a few lines, as you are a sort of medium between the Roots and their readers and customers. I am about to change the style of my frames, and have concluded to use some kind of self-spacer, as they will save a great deal of time in carrying supers in and out, also in getting combs licked off in fall, which I find gives a much better quality of honey the following season; and, by the way, I have got on to a way of getting combs cleaned off, which is much better than any thing I have seen yet. Well, to return.

I just received a sample frame from the Roots, which is, to my mind, a failure. I never saw any one extracting honey who did not do about all the handling and shaking and lifting from the projection of the top-bar. You can not handle heavy combs by the end-bar without sticking your fingers into the honey, or getting stung. Now, if I had wanted to keep people from handling combs by the projection I would just whittle down the projection just as they have it; and then if that did not keep them from jerking or shaking off the bees I would get a staple like theirs and drive it in just where they do. That settles it. Besides, I have shaken off several frame pro-


CHROMOTYPE ENG. CO. CLEVE.

W. L. COGGSHALL AND SONS IN ONE OF HIS APIARIES.

jections which were much stronger than theirs. It takes a plump ⅜ projection, not less than ⅞ wide, to stand the rapid handling. We want some kind of lead nail or button, or a piece of zinc about ½ inch wide clasped on to the end bar. This, clasped into the edge of the end-bar, would give a smooth bearing. Of course, you are not an extracted-honey producer. Will you please bring up this subject at once in GLEANINGS? I should like some time to give my 15 years' experience with 8 and 12 frame hives.



If you wish you can put this letter in GLEANINGS, and let the bee-keepers say what they think. Perhaps I have been too plain, as I have much respect for the Root Co. and the way they do business, and the taste they use in manufacturing goods.

RESIDENCE OF W. L. COGGSHALL, WEST GROTON, N. Y.

But I don't like to be buying Maule's Thoroughbred potatoes with red flesh without ever saying so. They are completely worthless for market.

Molesworth, Ont., Can.

[Dr. Miller replies:]

I sympathize with you in your feeling of impatience with the A. I. Root Co. They're all the time doing something that doesn't suit me. If I think a certain article ought to be made just so, they're certain to make it some other way. Still, if I should march to Medina and finish off the whole crew of them with a shot-gun, just as likely as not some other firm would spring up in their place that would be worse still; for may be the superseding firm wouldn't allow us to jaw them in their own paper—a comfort that's still left us.

Possibly, however, we bee-keepers are a trifle to blame ourselves. If we would all agree entirely, and then say exactly what we want, I've very little doubt we'd get what we ask for. But one man prefers this, another wants that, a third howls for something else, the fourth thinks the first three all fools, and the only wonder is that, in trying to find out what will suit the jangling lot, the whole A. I. Root Co. don't go into winter quarters in some insane-asylum.

But let's talk about that frame. That's a matter I've been deeply interested in, not merely on general principles, but because most of my hives have been in use so many years that they must be renewed, and I'm renewing the frames as well. Before me lies a frame that is, I suppose, the same as the sample frame you have. It doesn't suit me, perhaps, any better than it does you; but we might not agree upon the same objections. As to the difference between a frame for extracting and one for comb honey, I don't view it as I formerly did; for, after a little experience in the matter, I don't believe the difference amounts to much. I believe if I wanted to run for extracted honey I'd want the same frame I do now.

Very likely you are right, that most of the handling is by the projection of the top-bar. Considering that point alone, I should prefer a projection 3 inches long and about an inch square. It would give such a nice firm hold. There are frames in use with long projections, coming clear outside the hive; but believing it better, all things considered, to have them inside the hive, I must be satisfied to have them left only ¾ inch long. Then I find myself greatly annoyed with the ends of the projections being glued fast, and it's a choice between two evils, the sticking glue and a projection of only ½ inch. I decided that the glue was the worse evil, and experience confirms that belief. I'd rather have the annoyance of handling a short projection than to be troubled with the everlasting sticking at the end.

After handling a good many such frames, I didn't find the objection in practice that I had theoretically anticipated. With a thick top-bar you can get a very good hold without any projection—no need to handle the end-bar in any case.

You object to having the projection whittled down narrower than the rest of the top-bar. So do I. I don't believe there's any need of it. I suppose the projection was made ¼ inch narrower than the rest of the top-bar so as to allow room for the fingers to take hold. In actual practice I don't believe any thing of the kind is needed. You don't take hold to lift the frame till after you have slid it a little distance from its neighbor, and then you've plenty of room to take hold without any whittling away. If I were you, I'd stipulate that the top-bar should not be whittled narrower at the ends. It must be easier to leave it full width, and to my notion it's better. Then it would make it better to handle the top-bar if it were thicker. It is made of ⅞ stuff, but cut away at each side to ⅝. I like it better without any cutting away, and a saw-kerf at the center to take in the edge of the foundation.

That staple. You think it would be very much in the way. That's theory. In practice I don't find any trouble with a nail-head, and the staple is less in the way of the fingers. Somehow the fingers seem to accommodate themselves or slip out of the way mechanically. You want the spacer on the end-bar. Well, you can have it there, although I have some doubt whether you'd like it better in practice. But in that case there is more difficulty in having exact spacing of the top-bars, and that's the part we want most exact.

I want the top-bars exactly spaced; and I find in actual practice that, no matter how exactly the top-bars are spaced, the bottom-bars will vary very much. I want spacers also near the bottom of the end-bars. And I've never yet seen any valid objection to having end-bars and bottom-bars all the same width as the top-bars, neither have I found any objection in actual practice, except the single objection of cost. But as the frames are for a lifetime, I want the better frames, and will stand the cost.

Please tell us how you get the bees to clean up the wet combs. C. C. Miller.

[If we attempted to suit the taste of persons individually, and not masses, we should be in hot water all the time. It would be simply impossible to please persons here and there, of diametrically opposite notions.

So many suggestions came in, to the effect that we should shorten the projection to the top-bar, and thus do away with propolis fastening in the rabbet, we finally made the change. That this change was appreciated is evidenced by scores of letters that have come in and are continually coming in. Friend Mitchell seems to lose sight entirely of the *very reason why* the projection was shortened; but as you have explained it so well it is not necessary to go over the ground again any more than to say that, personally, I never think of handling any frame, whether old style or Langstroth, by the projections. I can get a far better grip by handling the top-bar near each end-bar; and with thick top-frames one can get a splendid hold for shaking bees or for any other purpose. It is true, we had narrowed up this projection slightly for the reason that we knew that some persist in handling the frames at this point, despite the fact that there is a better way.

I think you misunderstand friend Mitchell, doctor, as to the kind of frame he was talking about. The staples that he refers to were under the projection of the top-bar. The frame that we sent him was probably a Hoffman with end-spacing staples. What he would or would not think of staples as side-spacers we can not say.

But we do know that they are very successfully used in the northeast part of York State by a large number of bee-keepers, as side-spacers; and unlike yourself, doctor, they could not be persuaded to use those naughty nails.

While we do not court criticism from those who would find fault for the sake of it, we are always glad to have people speak out their mind, especially if they desire to help us as well as to help their brethren in the trade, and I believe friend Mitchell is one of the latter class. If he will come to Medina I think we can show him that it is never necessary to handle a frame by the projections. If he had to handle closed-end frames he would soon learn that the projections, for the purpose of handling, are not necessary. Since working with the Hoffman, all the use we have for projections is simply a support while in the hive.—Ed.]

THE FENCE AND PLAIN SECTION IN CANADA.

BY F. A. GEMMILL.

The sample fence separator and new section arrived safely, but not in time for the Oxford Co. Association. However, I was able for the occasion, having fortified myself with the three issues of Gleanings containing the articles and illustrations concerning them both.

Well, the whole matter was thoroughly discussed in an unprejudiced manner, and it was generally conceded that a separator constructed after the fashion of the fence would greatly facilitate freer communication, and better ventilation throughout the super, and also add to the better appearance of the section when filled, as also lessen the work of scraping propolis from its edges; and all agreed that, if a perforated separator was a good thing for securing well-filled sections, a perforated follower on each side of the super, *a la* Pettit, was even more of a necessity. But as your footnote to my article in the Dec. 1 issue states that you intend to use perforated followers or dividers instead of the one illustrated in GLEANINGS, you will, therefore, be in accord with our local convention, which contains some of our best comb-honey producers such as Hall, Emigh, Pettit, Newton, etc. There is yet another reason why a perforated or slotted separator is an advantage; and it is a fact that they can be made much wider, and thus prevent the top cells of the sections from being drawn out too far, as in the case when using a T super and a narrower separator.

To be sure, there were some objections, owing to the low price of honey, and some objected to making any radical change in their super construction, to say nothing of the extra expense of procuring new ones, but no valid reason against the use of the new combination was offered; and any one commencing in apiculture, or those intending to make a change from extracted to comb honey, might with advantage and profit adopt the new section and fence separator, with perforated followers on each side of the super.

Comb honey produced by the above methods, however, requires careful handling by the retailer, so as not to stick his clumsy fingers into the surface of the comb when removing sections from the shipping-crate, causing them to bleed, etc. The idea, also, of having thin veneer divide the rows of sections is, of course, a necessity, and they should be as wide as the sections themselves in order to facilitate the easy return of a section to the crate in case it should be necessary to do so.

I will take to Hamilton to-morrow, the 7th, the samples you have sent, and show them at the Ontario Bee-keepers' Association, to be held the 7th, 8th, and 9th, in case you have not made any provision for doing so.

Stratford, Can., Dec. 6.

[You must have misunderstood me. I did not intend to convey the impression that we intended to adopt "perforated" followers—that is, if you mean a double-cleated separator with holes bored or punched through it. I simply meant to say that we intended to put a fence (like the rest) between each outside row and the sides of the supers something (not strictly) after the manner Pettit recommends; and this reminds me that Pettit, in his experiments with slatted followers, found that the bees made ridgy or washboard honey-comb honey. I have since seen a description of these same followers, and find that the space between the slats was $\frac{5}{16}$ inch. This would, of course, produce the ridgy honey. The spaces should not be more than $\frac{2}{12}$, or the width of perforated zinc. If the slots in Pettit's followers had been so spaced he would, I think, have had no trouble. As such followers are cheaper, and easier made, why will they not secure as good results, exactly, as the "perforated" followers Mr. Pettit recommends? To use fences through the body of the super and perforated followers on each side would complicate matters somewhat.—ED.]

* * *

THE LONG-IDEA HIVE.

History of it, and some Corrections.

BY O. O. POPPLETON.

On page 634 of GLEANINGS, Sept. 1, Mr. Doolittle gives a version of the history of "Long-idea" hives, and some remarks on their use. While the history of the origin of any of our implements or ideas may be interesting, they are, of course, not of practical value; but I feel very much like trying to correct the historical part of Mr. Doolittle's remarks.

About 1870, Gen. D. S. Adair, of Kentucky, devised and (I think) patented what he named the "New-idea" hive. This hive was a long single-story one with the entrance in one end, at the side of the frames, instead of at the ends, as commonly practiced. The "new idea" of the general was, as I understood it, having the combs containing brood all in the back end of the hive, with surplus-honey arrangements all between entrance and brood, compelling the bees to pass through the surplus-honey part of the hive to reach the brood, instead of through the brood-nest to the surplus honey, as in tiered-up hives. I do not know who first changed from Gen. Adair's end entrance to having an entrance in the side of hives, and brood-nest in the center instead of in the back end; but I think the change was made and experimented with by a good many of us at the same time. It was not Gen. Adair who gave the name "Long Idea" to the hive. I have always thought the name was first given to it in derision; but as no other yet used describes the hive so well, it has become the recognized name.

The discussion over these hives occurred when I was first starting my apiary in Iowa; and after trying both styles for a year or two I adopted the long single-story hive, and still use it, not having a single double-decked hive in my apiaries. I used about 500 double-story hives for two years in Cuba, and was very glad to return to my own style. I would no more think of using a two-story hive for extracted honey than Mr. Doolittle would think of using the single-story.

The truth is, Mr. D. probably has no knowledge of a properly made single-story hive. Neither the Langstroth nor Gallup frames can be successfully used in such a manner. To use the right amount of combs in either of those frames will spread them out too much—doesn't leave them in as compact a form as they should be for successful use. I have told a great many bee-keepers who asked my advice, not to attempt to use shallow or small frames in such a way. Some of the foreign bee-journals, according to a review of them by Mr. Thompson, have lately been discussing this matter quite fully, and the conclusions they arrived at were similar to my own—that only deep frames were suitable for use in such hives.

Let me review Mr. Doolittle's objections very briefly. I can work a single-story hive much easier than a double-story. The extra depth of my frame, and a little higher stand, makes the top of the hive the same height from the ground as the top of a two-story Langstroth. I shake my bees inside, not on top of my hives, and avoid the trouble of crawling bees he speaks of. If I remember rightly, I used to be as successful as the average of bee-keepers in wintering my bees in Northern Iowa, and I used the long hive entirely, Mr. D.'s non-success with only two hives to the contrary notwithstanding.

Stuart, Fla., Nov. 18.

THE HOME OF THE HONEY-BEES,

As Seen by Dr. G. L. Tinker.

Having, some time since, sold out his factory, the writer no longer manufactures apiarian supplies, and should be able to write without prejudice or selfish interest of the great work being done by The A. I. Root Co. Feeling that the readers of GLEANINGS would be interested, and that it was the duty of some one to make a note of the progress that has been made in the manufacture of apiarian supplies, I have concluded to break my long silence in the bee-papers by writing out my impressions of a recent visit to the ' Home of the Honey-bees.''

First, it should be stated that the manufacturing plant of this company, for some years, has been the largest of the kind in the world. The credit of building up such a great work rests with the senior of the firm, a man of much energy and executive ability. It remained, however, for the new members of the firm (Messrs. E. R. Root and J. T. Calvert) to prevail in introducing a large number of new, improved, and costly machines that a higher order of work might be turned out. In this they have been highly successful. Work is not only turned out more speedily than heretofore, but it is finished neatly and accurately. To my great delight I saw all of these beautiful machines in active operation. Every part of the bee-hive seemed to be made in duplicate, every piece being finished perfectly, resembling the finest cabinetwork. There were piles upon piles of hives and parts of hives, the elegant finish of which reminded me that the time had come when one great manufacturing company, at least, has little if any thing to attain in the way of perfect workmanship in every department of their extensive works. The vast amount of labor and expense that has been put forth to reach this much-desired goal deserves recognition by those competent to judge of it, and it is hereby freely given, and without solicitation.

The new narrow section, to be used with the fence, has many things to commend it. It can always be furnished of whiter wood than a wider section ; it is economical ; it shows off the honey to the best advantage; it is entirely practicable, and I predict for it a popularity that no other style of section has ever reached. Indeed, it has seemed to me almost the last and best thing to be brought forth to cap the climax of effort to please the patrons of The A. I. Root Co.

The progress in the manufacture of foundation has been as great as in other lines of their work. The new drawn foundation must be classed with the extraordinary accomplishments of human genius. It had very much the appearance and about the same weight of section foundation that had been drawn out and built up by the bees until about ¾ of an inch thick. If I hadn't seen the machine on which it is made I should have declared the feat impossible.

Now a word about the many employees. I think I never saw a more earnest and diligent lot of workers, both women and men. They seemed to work with an enthusiasm quite unlike that observed in most large factories. Mr. A. I. Root seemed to be everywhere present among them, always pleasant and encouraging. I really do not know how many times he went through the factory that first day of December, but it was a good many. Through his kindness I was shown the vegetable-garden under glass. There were ripe tomatoes, and potatoes just coming up, and strawberry-plants with buds set; lettuce-plants, etc. We then went through the potato-cellar, and here were hundreds of bushels of the choicest varieties. They were all large and fine, and must please all who get them for seeding purposes

Finally, I must observe that there is but one danger, that I can see, to threaten the welfare of the "Home of the Honey-bees," and that is *fire*. I could not help thinking what a great calamity to the bee-keeping world it would be if fire should wipe out these magnificent buildings with all their fine machinery. No insurance could cover the loss ; and so may we all hope that every hand in that great establishment may redouble his watchful care, that such a misfortune may never occur.

New Philadelphia, O.

[We appreciate most thoroughly the kind things the doctor has seen fit to say—first, because they were entirely unsolicited; and, second, because the goods that Dr. Tinker sent out when he was manufacturing were acknowledged the world over to be the finest, in the line of bee-keepers' supplies, of any thing ever turned out. Well, to have the *maker of these goods* pronounce so high an encomium on those of our own manufacture is most gratifying indeed.

The doctor omitted to state that he came here to show us how to run his automatic zinc-perforating machine which we had purchased of him a few days before. To see that machine moving along like a thing of life, working all alone by itself for a period of twenty minutes, without any one near it, is a sight worth looking at. When we first put it in, it had some "balky spells;" but now it does its work silently, minds its own business ; and when it has finished its sheet of zinc it stops of its own "accord," waiting for some one to give it another sheet. I hardly need say the Tinker zinc has earned for itself a reputation that is world-wide.

Dr. Tinker sees only one danger—fire. We have taken every precaution possible. We have a fire-pump, the capacity of which is equal to any city fire engine; 500 feet of hose, hose-carts, hose-couplers, and all other tools necessary to fight fire with fire. In addition to this we have automatic Grinnell sprinklers all over the establishment, so that, if a fire should start anywhere, the sprinkler-valves will open automatically and put out the fire *at the start*, or hold it in check till help arrives. As if this were not enough, we have a watchman who patrols the plant nights and Sundays; and to make sure that he makes his beats at regular intervals he is checked off by an electric time-detector. If there is any irregularity, or he is off for a little time, the clock will show it. In fact, it tells just where he has been all night, and the exact time at each station. But this is not all. The whole property is insured in some of the strongest fire companies in the world ; and these companies send inspectors to look over our plant about every sixty days. If floors are not slicked up ; if greasy waste or any thing of the sort is allowed to accumulate, we are promptly notified, and ordered to make the necessary changes. Yet, in spite of all this, we may have a fire. But we do not propose to if we can help it.

A year ago last October the freight depot, immediately in front of our works, caught fire from sparks from a locomotive. Before our local fire company with the fire-engine could have got there the building would have been a mass of flames; but almost as soon as the fire was discovered we had a stream from our own fire-pump playing on it. As a result, but little damage was done.—ED.]

ANSWERS TO SEASONABLE QUESTIONS

BY G.M. DOOLITTLE. BORODINO. N.Y.

SHALLOW SUPERS, AND KILLING BEES ; HOW TO PREVENT SWARMING.

Question.—I have as many colonies of bees as I care to keep. I produce comb honey only; and as there is no call for bees in this locality I think of trying the following plan: I will hive the swarms in shallow extracting-supers so as to compel the bees to put most of the honey in the sections. Then in the fall I will kill the bees in these shallow supers, and render the brood-combs into wax. What do you think of the above plan? Will it be necessary to put queen-excluders over these shallow hives to keep the queen from going into the sections? Please answer in next GLEANINGS, if possible, as I want to prepare for next season, during this winter.

Answer.—Before proceeding to the general subject, I wish to say that the desire of our questioner to prepare for the coming honey season, during the winter months, is a commendable one. If more of our bee-keepers and novices in apiculture were built on the same plan, there would be fewer failures with those entering our pursuit, more first-class *white* honey obtained, instead of so much dark, and supply-dealers would be kept busy all the year round, instead of being rushed during May and June, so as to be obliged to run night and day, and then lie partially or wholly idle the rest of the year. I wonder how many apiarists have noted that the call for No. 1 and fancy white honey is *always good*, with the usual "*short supply*" nearly always quoted for the same, while dark and inferior honey is slow of sale, often accumulating on the market till it becomes a drug, or breaks down the market entirely. And I wonder if it has ever entered the heads of bee-keepers that the delay of preparing for the season till the season was upon them was one of the prime reasons for dark honey being put upon the market instead of fancy white. Thus year by year bee-keepers are losing money and ruining the markets by being always behind in preparing for the season, and most of them seem to be ignorant regarding the true state of affairs. They are some like the old woman whose husband was ill. She sent for the doctor, who came, and, after a careful diagnosis of the case, said to the old lady, "I will send him some medicine, which must be taken in a recumbent posture." After he had gone the old woman sat down, greatly puzzled. "A recumbent posture—a recumbent posture!" she kept repeating; "I haven't got one." At last she thought, "I will go and see if old Mrs. Smith has got one to lend me." Accordingly she went and said to her neighbor: "Have you a recumbent posture to lend me to put some medicine in?" Mrs. Smith, who was as ignorant as her friend (without being willing to admit it), replied: "I had one, but, to tell the truth, I have lost it." Rub yourselves awake a little, brother bee-keepers and see if you have not been in a "recumbent posture" quite long enough along the line of late preparation for the honey season. But, to return to the main point.

Yes, it will be necessary to use a queen-excluder in hiving a good or large swarm in a shallow super, as our questioner proposes—especially if he uses sections filled with foundation, and hives the swarms on empty frames, as what he says would indicate he expects to do. But if the plan is carried out just as it is outlined, why "render the brood-combs into wax"? It would seem like folly to make the bees build those shallow frames full of comb each year, or fill them with foundation, for the fun of making them into wax year after year. I often think bee-keepers are as ignorant regarding the value of good straight combs as they are regarding being prepared for the season. Such combs are as good as money in the bank, and I would allow no one to melt up the surplus combs I have, even if he would give me twice the number of square feet they contain, in foundation. What is there to hinder hiving swarms the next year on those combs from which the bees were killed, and thus save the cost of honey used in producing the material from which they were built, and all the labor of the bees besides? No, no! don't melt up good combs for the fun of it, or for the sake of making the bees build more. But why allow those colonies which are to produce the swarms to be hived in those shallow supers, and then killed, to swarm at all? Don't know how to work for comb honey and not have swarms? Well, then I will tell you how I worked my out-apiary last year without swarms, and had good results as to comb honey.

First, I made as many cages for queens as I wished, by wrapping wire cloth around a stick that was ½ by ⅞ square. The pieces of wire cloth were cut four inches long. Having the wire cloth formed into cages 4x⅞x½, inside measure, I sawed off as many pieces, ½ inch long, from the stick I wrapped the wire cloth around, as I had cages, when each piece was slipped into one end of each cage and tacked fast. Then other pieces were sawed off, for removable stoppers, to be used in the other end of the cages, when caging the queens. Then as many more pieces were sawed off, which were two inches long. These last had a ⅜ hole bored through them lengthwise, which hole is to be filled with "queen-candy," when wanted for use.

We will now suppose the swarming season has arrived, which is generally from a week to ten days before our honey harvest comes. I now go to each hive which is strong enough in bees to swarm or to work in supers; catch the queen, put her in one of the cages, using the short stopper to fasten her in. I now look over the combs till I find one which has a vacant space above the bottom-bar to the frame, sufficiently large to admit the cage so it can lie on top of the bottom-bar to the frame. This vacant place should be about one-fourth way back from the end of the frame nearest the entrance of the hive. This, supposing that your frames run endwise to the entrance. If I find no such vacant place I make the same by cutting away the comb. Having the queens thus caged I wait 9, 10, or 11 days, according to the weather, when I proceed to cut off *all* queen-cells which may have been started, shaking the bees off each comb in front of the entrance, so that I may be sure not to miss any. In replacing the combs in the hive I remove the stopper from the cage and replace it with the long one which was filled with candy that morning, so the candy will be fresh. It will take the bees from two to three days to eat the candy out of these long stoppers, which, when done, liberates the queen. While the bees have not been queenless at all, they have been without a laying queen from 12 to 14 days, which I find is sufficient time to stop all inclination to swarm, unless the honey flow holds out more than four weeks, which is an unusual thing. During the time the queen has been caged, the most of the honey coming in has been stored in the brood-combs, unless the bees had commenced in the sections earlier, in which case they keep right along the same as though nothing had happened. In any event, thus caging the queen seems to change all desire for swarming to that of storing, as soon as the queen commences to lay again, when the honey will go into the sections as if by magic. Why I said 9, 10, or 11 days, according to weather, was that it is all right to cut the cells on either of these days, so we need not go out on severe stormy days, unless it storms on all three. I generally cut the cells on the 10th day, where I can have my choice of days. Then why place the cage just where I have said? I formerly placed it anywhere in the hive where the bees could have access to it, so as to care for the queen; but last season I happened to place the cage on the bottom-bars of the frames in several hives, as given above, and I found that these colonies not only worked better in the sections, but did not seem to consider themselves queenless to an extent sufficient so that any of them started a single queen-cell.

Of course, this matter will need more time than one season to establish the fact that bees will not start queen-cells when queens are thus caged; but I thought it would do no harm to tell just how it worked last season; then if it should so continue each season and in all localities, we could secure better results, with no shaking off the bees to find and cut cells. But in any event I much prefer this plan to taking away the queen entirely, as practiced by Mr. Elwood and others.

And now, Mr. Querist, perhaps you had better try your plan on a few colonies, and the one I have outlined here with a few more, and run the rest of the apiary, for next year, the same as you have done in the past, when you will be able to tell which is best suited to your wants; and after deciding, then work the whole in that way until you find something better. Don't, in any case, risk the *whole* apiary on some untried venture, unless you want to feel like kicking yourself for losing a whole season by something which may fail in your hands.

[Say! look here, Mr. Doolittle. I am not sure but you have struck upon something valuable in the way of preventing swarms just at a time when we don't want them. It is true, a part of the plan is old; but possibly you have improved it in such a way as to remove some of the objections to the old plan. Some have reported that colonies with caged queens didn't work as well as those with queens having their liberty through the hive. In my experience, queenless colonies lacked the vim and energy of queened stocks. I hope friend D. will jog our memories about the time this thing is in season, so we can all try his plan. The possibilities to be obtained are too great to be lost sight of for want of a trial.—ED.]

K. C. W., Vt.—If you find your hive filled with combs of honey we would not advise you to take any of them out. They will do no harm. Just leave them as they are, and it will be all the better for them next spring.

Heads of Grain from Different Fields

POISONOUS HONEY.

Living where there are large quantities of *Kalmia latifolia* and *Kalmia angustifolia*, I have read with great interest the different articles on poisonous honey and honey-plants that have appeared in GLEANINGS from time to time. There is no room for doubt that the foliage of *Kalmia* is poisonous to certain animals and also to man. The common name of *Kalmia angustifolia* is sheep-laurel, and was given it on account of its making sheep sick that ate it, which they will do if it is allowed to grow in their pasture. There have been cases of poisoning caused by eating partridge that, owing to deep snows, have not been able to obtain any other food than kalmia buds. None of these cases were fatal *that I know of*.

In regard to poisonous honey, I must say that, so far as kalmia is concerned, I do not find any thing to support the opinion that it is a source of it. I have talked with other bee-keepers, and watched the honey stored by my own bees, and can not find that kalmia honey is harmful, and I am unable to find any cases of honey-sickness in this locality that can be traced to kalmia honey; but if at any time I do find any I will let the readers of GLEANINGS hear of it at once.

All the cases of sickness from honey that I have heard of, I have looked up and found that either the parties ate too much or that honey always makes them sick, no matter what kind it may be or how little they eat of it.
L. F. HIORNS.

Scranton, Pa., Dec 8.

ROOT'S HONEY DISPLAY IN CANTON; HOW IT STIMULATES THE TRADE.

I was quite surprised a few days ago, when the Root Company's display of honey and bees appeared in Canton. I had worked hard for the last four years in building up a honey trade, and was afraid that the Root Company's honey would interfere with it; but when Mr. Weed saw that I was taking good care of the honey trade in this part of the country he did not try to make sales, and kept on with only the display. It was the means of attracting a great deal of attention, and he has set a great many people to talking about honey, and eating it, who had not thought of it before. In this way it will help me. The kind of honey used was the California sage. This is one of the best kinds that we have, and is what I am selling to my customers, and I am now ready for 600 pounds more of it.

Canton, O., Dec. 9. T. A. SWINEHEART.

[To stimulate a demand for honey, and for *our* honey especially, we have been sending Mr. A. B. Weed, brother of the "foundation man," out to the near-by towns, and this shows what was done in one of them.—ED.]

GRADING BY PICTURES INDORSED.

I like your idea of pictures for grading-rules, and would suggest, when you get them, that they be put on a separate sheet or on a page of advertising matter in GLEANINGS, so we can get them out to have with us while grading.
BENJ. PASSAGE.

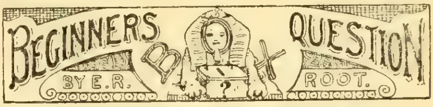
Stark, Mich., Nov. 25.

[We expect to get out some pictures as soon as we can hear from more of the brethren on the subject. I'd like to get all the "pointers" possible.—ED.]

THE NEW FENCE AND SECTION.

I am considerably taken up with the new fence separators. I can't help believing they are just the thing comb-honey producers have been looking for. I will give them a trial, and shall want 350 or 400 of them. This has been a great year here for honey and swarming.
J. W. COOK.

Poneto, Ind., Dec. 6.



Beginners' Question

By E. R. Root.

H. A. B., Pa.—It is not unusual to find bees in bee-trees, wholly or nearly destitute of stores. Colonies found in trees are very often second or third swarms—swarming very late, and gathering very little in the way of stores for winter. In modern times it is very seldom that the first swarm gets away from the bee-keeper. If these succeed in escaping, and are then found in a tree, they will probably have sufficient stores for winter.

H. C. K., Pa.—With regard to the unfinished sections that are half filled or more, I would advise extracting and then leveling the combs down with a Taylor comb-leveler. For particulars regarding this last named, see page 15 of our catalog. Such sections, if put on the hive early enough, may, under some circumstances, be emptied by bees; but the wood of the section would be very much soiled, and it is, therefore, preferable to extract and level down.

R. A. H., Cal.—The cost of a patent will be something like $75 or $80—that is, if you have a competent attorney to work for you. But I would suggest that you make formal application through an attorney, and this will make you less than half the expense of the whole patent, and then let the matter rest for a time. You would then be at liberty to submit your idea to us and your friends; and if they thought well of it you could pay down the remaining fees and have the patent formally allowed. This is very often done. The formal application, for at least one year, will secure to you almost as much protection as the patent itself, and meanwhile you would have an opportunity to determine whether it is valuable enough to go to further expense.

By
E.R.
Root
Editorial

Noms de plume are all right enough in their way; but when a writer, in order to screen himself, uses an assumed name in order to cast slurs at a brother-man, he is little better than a coward who skulks behind a tree to throw stones. If a correspondent wishes to correct abuses, or "straighten up" some erring brother, let him come out fair, over his own name. Mud-slinging communications over a *nom de plume*, and anonymous letters, belong to the same category, and have been put under the ban by our best people.

THE Dec. 15th issue of the *Bee-keepers' Review* is a most pleasant surprise. It comes out in a new tinted cover, heavier paper, new type (like this), and is, moreover, very thoroughly and nicely illustrated. A unique feature of this number is the use of a frontispiece printed on a fine heavy grade of plated paper, showing a characteristic sample of foul brood. The contributed articles are good, and the editorial work itself is up to Mr. Hutchinson's own high standard. By changing a single word I can honestly adopt the very sentence that friend Hutchinson used in reference to GLEANINGS; viz., "I am proud of the *Review*, even if it is not my own journal."

THE TRANS-MISSISSIPPI EXPOSITION.

THE grounds for the Trans-Mississippi and International Exposition to be held at Omaha, Neb., June 1st to Nov. 1st, 1898, are fast assuming the proportions that assure its becoming the grandest exposition since the Columbian, held at Chicago, and in many features it will excel that great exposition. In the bureau of bee-industries this promises to be the finest the world has ever witnessed, and arrangements are being made to erect a separate building for this bureau, which will be after a modern style of architecture, and whose inside arrangements will be the most complete, with the greatest amount of light possible, both from the sides as well as from the roof. The exhibition-cases will be erected with the building, and, in addition to the usual style of glass sides and ends, will be covered with glass so as to emit the light from above, in order to prevent shading the honey, placed on exhibition, from any direction.

Convenient operating-rooms will be arranged in this building for the convenience of exhibitors in filling their exhibition-jars, and for reliquefying honey whenever occasion demands. It is proposed to allow exhibitors to replace portions of their exhibits in honey of 1897 with the crop of 1898 whenever they so desire. Plans for this building are now being formulated, and we hope to furnish our readers with a cut of the same, together with a description of its interior arrangements before long. The opportunity for bee-keepers to show the wonderful progress of this industry in the United States, as well as to increase the sale of supplies in the great Northwest, where this industry is making strides beyond the comprehension of many, should not be lost on this occasion. Commissioner Whitcomb, who will be in charge of this bureau, will spare no pains to make the stay of bee-keepers in this bureau as pleasant as possible.

A NEW SPANISH BEE-JOURNAL.

WE have received from the publishers, Messrs. P. Robledo & Co., of Santiago, Chile, the first (June) and subsequent issues of *El Apicultor Chileno* (The Chilean Apiculturist). The pages are the size of this, and 16 of them. The typography is excellent, and the contents good, though necessarily largely of a selected nature, as our Chilean friends are as yet satisfied to learn from the rest of the world rather than to undertake to teach. That the editor realizes the task he has set before himself is evident from his first paragraph. He says: "We have been obliged in our work to take the bees themselves as an example of patience in order to embolden us for the task we have before us. To get up an apicultural review, and especially a review which in its teachings will be contrary to the system already in vogue in this country, and against methods now well understood, seems to be too bold a piece of audacity." That's the spirit that's bound to win, every time. We shall take pleasure in recommending this journal to all who understand Spanish. The first thing the editor undertakes is a defense of movable frames against the old system, which alone indicates the backward condition of bee-keeping in that land. It is edited by Juan Dupont-Lafitte.

THREE COMMISSION HOUSES.

I HAVE sometimes wondered if it would not be a good idea to make special mention of those commission houses that always do as they would be done by. To single out one or two would almost give the impression that the others were not doing as well, when, indeed, they may be giving just as good satisfaction, but we have not the knowledge of the deals. I'll risk speaking of one or two, at all events. As we are doing quite a business in buying and selling honey, we find ourselves obliged to turn over considerable of it to commission houses. We have sold quite a lot in this way to the Columbus Commission & Storage Co., of Columbus, O.; and although this is a comparatively new firm, it has always given us prompt and satisfactory returns.

Still another firm deserves special mention, and that is R. A. Burnett & Co., of Chicago. A month or so ago a customer in California asked us our opinion of this firm, stating that he had an offer from them on a carload of honey, and that he would accept it if we considered them as O. K. We wrote him that we had always heard good reports of them, and that he would be perfectly safe to trust them. A few days ago a letter came, thanking us for the information, and adding that the carload of honey was sent, and that Burnett & Co. had settled for it exactly as they agreed, and within the time specified.

Chas. McCulloch & Co., of Albany, seem to give excellent satisfaction.

We never had but one complaint against them, and that was settled to the satisfaction of their customer, although we thought the customer wholly in the wrong.

Well, now, really I must stop. There are other good firms; but if I keep on mentioning, until I cover the whole list, some will feel slighted.

WHAT I CALL WELL-RIPENED HONEY.

I BELIEVE I am beginning to enjoy extracted honey more than I ever did before. The kind we have now at our house is white mountain sage. It is very thick to start on; but we pour it out into pitchers, and let it stand a month or so in a dry room before using. At the end of that time it becomes so thick that it will hardly pour out; and when the pitcher is inverted, the honey rolls out in one great stream, and piles up in the dish like a coil of rope. Then comes the fun of cutting off the stream. The size of the rope keeps getting smaller and smaller, after the pitcher is righted, until the filament is less than the size of a common hair. This is cut off with a spoon; but the honey in the dish is so thick that, when the dish is inverted, it will take a little time for it to run out. On dipping the spoon into its beautiful crystalline surface, it will dent clear down to the bottom of the dish before the honey will fold over the spoon. About this time, or when the spoon is sufficiently well covered, it finds its way to my mouth, but not till the spoon has been twisted over and over to break off the filament. The honey is so waxy that it requires almost chewing in order to get it in condition to swallow, reminding one very much of maple syrup boiled down and dropped on to snow. Well, this is what *I* call well-ripened honey; and any one who has eaten it, when reduced to the consistency I have described, feels very loath to eat any thing else in the way of extracted honey that is not as thick.

If you have any one at your house who does not like honey, set some of the kind I have been describing before him.

I do not claim that mountain sage is the *only* honey that will taste good when so treated. Any honey, if of good flavor, when allowed to stand in an open vessel in a dry room, will become thick and waxy if given *time* enough.

HONEY AS FOOD.

EXTRACTS are continually being made from Dr. Miller's honey-leaflet. I have already referred to the fact that two large dailies—one in Columbus and one in Cleveland—had given two long write-ups of honey and its uses as food; and now that great daily, the Chicago *Record*, has a half-column article, almost the whole of which is taken from the leaflet. If these public servants will only keep on copying from it, no one cares about any credit. We bee-keepers want the world generally to know that honey is the most wholesome form of sweet known. One thing that all the dailies have published so far is the following:

> The silly stories seen from time to time in the papers about artificial combs being filled with glucose, and deftly sealed over with a hot iron, have not the slightest foundation in fact. For years there has been a standing offer by one whose financial responsibility is unquestioned, of $1000 for a single pound of comb honey made without the intervention of bees. The offer remains untaken, and will probably always remain so, for the highest art of man can never compass such delicate workmanship as the skill of the bee accomplishes.

The fact of having thus chased up the comb-honey canard will be most salutary indeed.

As I have before said, we are doing all we possibly can to get these honey leaflets scattered over the United States. We are putting them in all shipments, in letters, in catalogs—in fact, in any thing and every thing that will carry the truth about honey around the world. I have already spoken two or three times about the advisability of bee-keepers visiting their local editors, and asking them to make extracts from the honey leaflet. If you give them a sample of nice honey at the same time, they will be very sure to give you a write-up. Keep the ball rolling.

PRECEPT UPON PRECEPT; HANGING ON TO THE OTHER FELLOW'S COAT-TAILS.

SOME great man has said that it is not the one who says a great thing for the first time, but the one who says it and keeps saying it first, last, and all the time, who is the real benefactor. I believe there is much of truth in it. From my own experience I know that a valuable idea may be put in print by a writer in one of our bee journals; but unless some one keeps harping on it till some are disgusted and some see the point, the great idea will die, with no one to do it reverence.

Sometimes, I acknowledge, I am slow to catch hold of some good idea that some one else ahead of me may have conceived first; but after I have really "sensed it," as Samantha Allen would say, then I can't keep still. If I continually harp on a thing until it is worn threadbare, it is not because I have a desire to be called a real benefactor, but because I can not help it. Perhaps one or two illustrations will serve to show what I mean.

The non-burr-comb thick top-bar was advocated by only one or two bee-keepers. Dr. Miller, among the first, began to "sense" its real value. After a while I caught on to Dr. Miller's coat-tails, and we two kept whirling around the truth until now nearly all the fraternity has joined hands (coat-tails).

Self-spacing, at one time, seemed to be advocated by only a few bee-keepers. I became seized with the great value of the principle, and began to harp about it until I know some of my good friends began to believe I could not talk about any thing else, and I almost thought so myself. While fixed distances are not used universally by bee-keepers, they have made great strides, and the time may come when unspaced frames will almost be things of the past.

Well, now, here comes along the plain fence and section. Only a very few bee-keepers have been using them. One friend writes me that he has used them since 1872, and I know of a good many who have used them for the last eight or nine years. They were getting good prices—rather better than some of their neighbors who were following along in the well-beaten track. Well, if I have said a good deal about these ideas it is because I have been trying to hang on to the coat-tails of some of my friends who are at the very front of the procession. Then there is that man Weed. Sometimes I can hang on to his coat-tails and sometimes I can't.

He is riding now two or three hobbies * all at once. That's something I can't do.

Now, please do not misunderstand me, dear reader, for I see what I have already written *might* be construed as meaning that I myself (whew!) am a real benefactor because, forsooth, I keep talking about great ideas (great in my own estimation); that is not the thought at all. I only wish to apologize for and give my reason for harping, and for keeping harping on certain subjects. No. no. I am not even the motor power, the hub, nor even the felloe in the great wheel of progress. I do not know that I am even a spoke; but one thing I do know—I am willing to get behind and push, if the "some other fellow" smarter than I will only show the way.

W. L. COGGSHALL; HIS APIARIES AND HIS HOME.

ELSEWHERE I have given you a view of the home of W. L. Coggshall, and also a view of Mr. W. L. Coggshall and his two boys, aged thirteen and ten years, in one of their apiaries. Brownie, the older, is the one who goes out with his father and one of the men. Mr. C. told me how himself, Brownie, and Mr. Buck, one of his helpers, once visited four apiaries, took 10,000 lbs. of honey in three days, and traveled 35 miles over the roads. To see Mr. Coggshall and his men at work extracting is a sight to behold, and their methods of working, together with some half-tones, I will give at another time. I hope also to give a view of one of their lightning operators in the very act of ripping open a hive, jerking out the combs, and shaking and brushing bees off with a celerity that is astonishing.

Mr. Coggshall has—well, I don't think he knows how many—perhaps 1000 or 1200 colonies, located in ten or twelve different apiaries. As we rode over the hills he would point out a location that would be something like fifteen miles off, and say, "Over there I have an apiary on top of that hill between those clumps of trees. Over there I have another, and over here another;" and so on he would direct his hand to the various points of the compass.

The yards are usually located in the woods, remote from any house. I could not understand why he should not be bothered by thieves; but after having visited two of his yards I made up my mind that any thief not a bee-keeper who would venture near one of his apiaries, without being armed *cap a-pie* with veil, gloves, cowhide boots, etc., would simply be inviting sure death from the little defenders of the apiary.

In the picture, where Mr. Coggshall appears in the apiary, he has his veil turned up; but let me whisper to you that, when he works among the bees ordinarily, he has his veil turned down, a properly equipped bee-suit, and good thick gloves on. After being in one of his yards a part of a day I came to the conclusion I would do likewise. As it was, the little chaps had a fashion of reaching clear through my golf socks. Indeed, I found it very comfortable to keep my hands in my pockets most of the time, especially when one of his lightning operators was opening a hive *a la* Coggshall.

The hives used are of various patterns. It seems that Mr. C. has bought out bee-keepers in various localities, and in or near those locations has established, with the colonies so purchased, a yard. Having so many, Mr. C. does not find it profitable to change over to the new-fangled fixtures, but uses the hives and implements that he bought with the bees. But whatever hive is used is put in a winter case, for Mr. C. never carts his bees home, but winters them on their summer stands. Sometimes the cases are rudely constructed boxes, and sometimes double-walled hives.

The handsome dwelling shown in the other view was built by Mr. Coggshall some two or three years ago. Every thing about the structure is modern, with all the latest equipments. The farm buildings are substantial, and the fences are cattle and chicken proof. All of these, and more, I believe, were paid for out of the products sold from the hive. Mr. C., besides being a progressive bee-keeper, is an up-to-date farmer. He can talk bees, sheep, or wheat, or what not. He has an unerring eye to business; in short, he is a hustler; and every one who works with him, even his horses and bees, have quick ways of doing things.

I shall have more to say at another time—that is, if friend C doesn't choke me off.

THE ANNUAL REPORT OF THE UNITED STATES BEE-KEEPERS' UNION.

THE following report has been sent to all the members; but as there is much of importance in it, it seems proper that it should be submitted to a larger circle of those who are friends but not at present members. It is hoped that many if not all our readers will send in their dollars and become members. As a special inducement we will furnish GLEANINGS one year, and membership to the Union for the same length of time, for $1.75. Send the amount and we will see that your name is given to the General Manager, and that the $1.00 is properly applied. The following is the report referred to:

Forest City, Iowa, Dec. 10, 1897.

Fellow-members:—I was appointed General Manager by the Board of Directors in April, 1897, without my knowledge, and much against my inclinations. I felt that a wiser and less busy man ought to control the affairs of an organization projected with a purpose so useful and aggressive. I consented, reluctantly, to take charge of your interests for the time being, hoping to be relieved in the near future from the additional strain which, I was sure, its duties would impose.

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* I hope to show you a picture of 'em later on.

The time since the complete organization of the Union has been so short, and the funds at my disposal so limited, it has not been possible to exhibit any tangible results.

Acting under the advice of the Board of Directors I have given counsel in several cases where bee-keepers had gotten into, or were threatened with, litigation, but no money has been appropriated toward defending them. Just how much good I have accomplished in helping to settle these vexatious affairs I shall not pretend to say.

I have also interested myself in the subject of pure-food legislation. There is no doubt in the mind of your General Manager that there is need of national as well as State laws for the protection of food consumers; and I think that an organization representing a thousand of the best and most intelligent people in this country, extending its influence into almost every congressional district, could have, if it chose to do so, power in shaping national legislation. We owe it, not only to our own industry, but to the health of all our people, to compel those who deal in food products to be honest. I have been in correspondence with the special chemist of the United States Department of Agriculture in relation to the adulteration of honey. From a recent letter I quote the following: "I have received numerous letters from different States on this subject, and am led to believe that honey is frequently and openly adulterated. I should be pleased to have your views as to the advisability of calling a convention of the friends of pure-food legislation to meet here in January or February to consider the question, and to reconcile differences of opinion, and unite upon a bill and push it before Congress."

The Board of Directors as now constituted feel the importance of this line of work. Honey can not be produced and sold in competition with glucose syrup; and if the latter is permitted to be sold under the disguise of *pure honey*, bee-keepers may better brimstone their bees than to try to sell extracted honey.

No pure-food law ever was or ever will be enacted unless in answer to the demand of the people; neither will it enforce itself when on the statute-books. Somebody must look after it. It is the aim and purpose of this association to aid in the enactment and enforcement of laws in States and nation, protecting apiarian interests.

Another field of usefulness which this association has outlined, is the bringing to justice of dishonest honey commission men. I believe the simple fact of our organization and declaration of intentions has already had a wholesome effect on this class of swindlers. We purpose, if evidence is produced, showing fraudulent dealing with our members, to employ the best legal talent obtainable, and to make it so hot for all such fellows that they will want to emigrate to the Klondike or some other cool region, where the stings of conscience and a Bee-keepers' Union are supposed to be unknown.

We have been solicited more than once to help bee-keepers out of trouble who are not members of the Union. It ought not to be necessary to say that this organization was effected "*to protect the interests of its members; to defend them in their lawful rights.*" While we intend to protect the *industry* of bee-keeping and promote its interests in every way possible, no one can reasonably expect personal aid who does not affiliate himself with the Union. Let us learn a lesson from similar industrial organizations — the dairy associations, for instance. Let us put aside jealousies and bickerings, and unite in *one* powerful organization, and march to victory.

The Executive Committee have directed that the postal-card ballots for Directors and General Manager be sent to Dr. F. L. Peiro and F. Grabbe. Please denote your choice for these officers on inclosed card, and mail same *before* Jan. 1, 1898.

FINANCIAL STATEMENT.

Required by Section 5, Article IV. of the Constitution:

Amount received from Secretary, Dr. A. B. Mason		$180 09
Amount received from members direct and other sources		23 00
Total rec'ts to Dec. 10, 1897		203 09
Paid for letter-heads, postage, postal cards, envelopes, and printing annual report and other blanks	$ 21 00	
Balance	182 09	
	$203 09	

It may be thought by some that the net balance from about 250 paying members is quite small. It should be borne in mind, however, that the necessary expenses growing out of two annual meetings had to be met by the Secretary. These expenses, such as printing programs, publishing proceedings, badges, postage, etc., and $25 as a very inadequate compensation to the Secretary, all amount to $57.16. The other expenses shown above are unavoidable. If our membership were 1000 the expenses would be but little more.

Trusting that information I have given you will be satisfactory, and that, during the year to come, you will all be blest with health, prosperity, and happiness, I am

Sincerely and fraternally yours,
EUGENE SECOR, Treas. and Gen. Man.

WE have piles of matter awaiting publication. Beginning with the next issue we shall have to run extra pages until it is all used.

TRADE NOTES

BY EARNEST R. ROOT.

OUR 1898 SUPERS, FENCES, AND SECTIONS.

The following is some matter that I have prepared for our forthcoming catalog. As it details just exactly the position we will take in regard to the improvements in supers for the coming season, we give it to our readers before sending it out to our larger circle of friends and customers. I think we are now in a position to furnish every one just what he wants in the way of a fence and plain sections. As we have machinery and appliances we are in a position to turn out a product in the way of fences that will be accurate and cheap. Having personally visited and corresponded with many of those who have used fences, I think we are able to give our readers what will prove to be satisfactory and practical. A fence that is not properly made will give no end of trouble.

DOVETAILED SUPER WITH PLAIN SECTION AND FENCE.

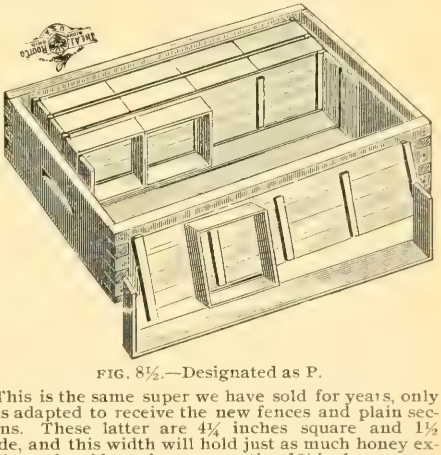


FIG. 8½.—Designated as P.

This is the same super we have sold for years, only it is adapted to receive the new fences and plain sections. These latter are 4¼ inches square and 1½ wide, and this width will hold just as much honey exactly as the old two-bee-way section 1⅞ inch.

The fence is made up of four horizontal slats ⅞ inch wide, 1/12 of an inch thick, and long enough to reach into grooves in the end cleats. Six cleats 2/12 of an inch thick, and ½ inch wide, including the end cleats, are glued on at our factory by automatic machinery much more cheaply and accurately than it can be done by hand. The cleats, it will be observed, do not reach quite to the top of the fence. The object of dropping them down thus is to give the bees passageways around the corners of the sections, thus doing away, to a considerable extent, with holes in the corners of the sections.

The section-holders are the same width as the sections (1½ inches), and, like them, have no bee-ways or awkward scorings in the bottom-bars. The ends are only ¼ inch thick (instead of 9/16, as were the old ones), leaving a bee-space between them and the end of the super. To prevent end play a wedge-shaped strip at the bottom secures the holders to the proper position.

Instead of making use of a follower we use a fence on each outside row of sections, thus in a measure carrying out the Pettit system of producing comb honey, the special feature of which consists in having the outside rows of sections as well filled out as those in the center. When the last fence is in, the whole is wedged up with a thin wide strip.

THE FENCE AND SECTION FOR THE OLD-STYLE SUPER.

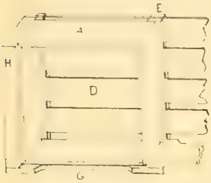


FIG. 7½.

There are many who, having purchased our supers of older pattern, desire to use the fence and plain section, and thus keep up with the times. Sections they would have to buy, as a matter of course, so that all the expense will be for fences enough to supply supers they desire to so equip. The fence for this purpose differs a little in construction from that shown in the super in Fig. 8½, but only in the form of the end cleats. Instead of being grooved to receive the ends of the slats, as in the other, they are plain, and the same as the middle cleats, only a little narrower and longer. As the section-holder of the old-style super is 1⅞ inches wide, the plain section with the cleats of the fence, one on each side, just nicely fills up the space; and, as the horizontal slats project beyond the end cleats, these projecting ends fill up the space between the section-holder ends the same as the old plain separators did. This fence is designated as the S fence.

TALL SECTIONS FOR EIGHT-FRAME SUPERS.

Within the last year or so tall sections, taller than broad, have been growing more and more into favor, and it is argued that they look more symmetrical, since in appearance they are more in harmony with surrounding objects with which we are familiar (such as doors and windows, for instance), and to which our tastes have been educated by long association. Again, it is argued that the tall box of honey standing right beside a square one of the same superficial surface and weight *appears* to be larger. Whether these advantages are apparent or real, it is certainly true that, in some markets at least (not all), notably in the East; the tall sections sell more readily, and bring a higher price. In recognition of this fact some bee-keepers actually opposed to them have been forced to adopt them after they saw that the oblong boxes would outsell their square ones on the same counter. It is equally true that, for a given hive surface (that is, over the top of the frames), more of the tall boxes can be accommodated. For instance, our eight-frame hive will take on top 30 of our 3⅝x5x1½, as against 24 of the regular 4¼x4¼x1½, and holding exactly the same amount of honey. Of course, a deeper super would be required to take a deeper section, but fewer supers would be needed to produce a given amount of honey.

If a deep section, then what size shall it be? The 4x5 seven-to-the-foot is a nice size, but it can not be used to the best advantage in the eight-frame width of super, which comes nearer being standard than any thing else. Our 3⅝x5x1½ holds exactly the same amount of honey as our regular 4¼ when used with the fence; and, moreover, five of them in a row just exactly fill out the length of the super.

IDEAL SUPER WITH TALL SECTIONS.

This super is equipped with fences and plain sections, the same as our other up-to-date supers; but the sections are 3⅝x5x1½, and the super is 5¾ in. deep, or enough to accommodate the five-inch depth of sections. The sections themselves are supported on plain slats ⅜ in. thick, and the same width as the sections—the slats resting on a tin strip nailed on the bottom inside edge of the ends of the super. The fences are supported in the same manner; and as they rest *between* the slats on this tin support, the bottom of the sections and the slats will always exactly match; i. e., be in exact alignment—a matter of no slight importance. Five sections are supported on each slat—the five just exactly taking up the entire length of the super; and six slats, each with its five sections, or 30 in all, with the seven fences, fill up the super. It will be noted in this connection that these slats, unlike section-holders which are used in the other super, have no uprights at the ends. While they are a convenience in shifting the several rows of sections, they are not essential, and are omitted, as they can not be used in this super.

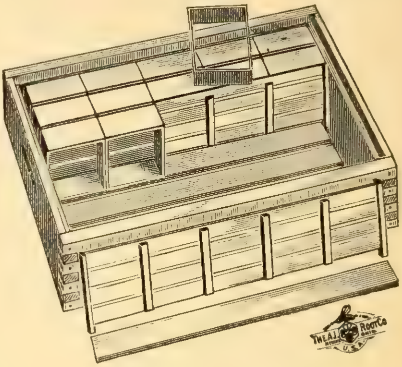

THE A.I. ROOT CO.

FIG. 9½.—Designated as I.

The style of this super is no experiment. Something very similar to it has been used for years by that practical bee-keeper Miles Morton, Groton, N. Y., after whom we have copied much.

N. B.—The 4x5x1¾ plain sections may also be used in the eight-frame deep super, but the supporting slats, as well as the sections, will have to run crosswise of the super—an arrangement we can not recommend. We can so arrange our eight-frame 5¾-inch-deep super for these sections, when so ordered, without extra charge. Designated as L.

SUPPORTING-RACK FOR TALL SECTIONS.

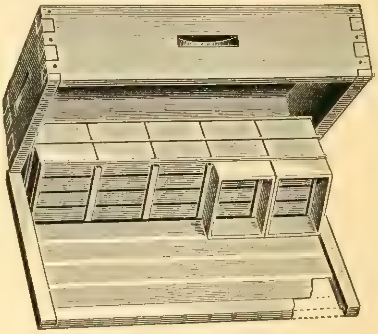


FIG. 10½.—Designated as RI.

Some (and perhaps many) of our old customers will wish to test the tall section in their markets at as little expense as possible. For such we have arranged a rim to go on the bottom of their regular eight-frame dovetailed super. This rim is made of stuff ⅞ inch square, and on the two ends, on the bottom inside edge, are nailed strips of tin to support the slats which are furnished with the rim. With this arrangement and fences one can use our 3⅝x5x1½-inch sections in his regular super on exactly the same plan as is described under Fig. 9½. Indeed, in connection with the fence it makes a super, to all intents and purposes, that is identically the same as our Ideal super, and can be used in exactly the same way. If the five-inch-deep sections take well in the local market, the rim may be nailed on to the bottom permanently.

This same supporting rack may be made to take the 4x5x1⅜ plain sections, but the sections and slats will have to run crosswise of the frame, and will be designated by RL.

OUR HOMES.

Then ye shall appoint you cities to be cities of refuge for you; that the slayer may flee thither, which killeth any person at unawares.—NUM. 35 : 11.

Away back in the early ages, when matters of law were in their infancy, a man was often in danger of being punished when he was at least comparatively innocent; and our text tells us that God, through Moses, directed that cities of refuge should be appointed, about equally distant, three on either side of the Jordan. These cities were to be literally places of refuge for any one who was in danger of being injured or killed by mob rule. I wonder if our law-makers of the present day have ever thought that it begins to look as if we ought to have cities of refuge now, where a man may be sure of being protected until he can have a fair and impartial trial. Just now, however, I have something else in mind. My attention was called to this matter by an article in the *American Agriculturist* of Dec. 11, entitled "Mothers' Meeting." The article was written by H. Annette Poole, and she speaks of being present at a mother's meeting here in our own town of Medina. The meeting was conducted at that time, it seems, by Miss Sarah Smith, the lady who furnished an article that we sent out in tract form a year ago, entitled "Child-training." See page 28, 1897. Well, Annette Poole, in describing her visit to the mothers' meeting, writes as follows:

> The text for Miss Smith's heartfelt sympathetic little talk was "Cities of Refuge." Speaking first of the places described in Scripture as set apart for hunted criminals, she went on to the thought that every little child should find a sure city of refuge in its mother or its teacher, not only from its own naughtiness, but from its inability to express its ideas. Children are often silent under censure because they do not know how to put into words the thoughts which fill their brains, and they often feel that they are unjustly blamed because they can not explain their motives. Mothers and teachers should try to help their struggling utterance, and, as far as possible, put themselves in the child's place. We are too prone to hush the chattering tongue and bid the little one "run away" and "not bother." True, to patiently sit down and try to unravel the child's interest, when it scarcely knows it itself, to help it to know and express its own purpose, consumes a great deal of time, and the day scarcely furnishes time enough for the manifold duties which crowd upon both mothers and teachers. But, after all, who has a better right to demand our time and attention than the children in our care?

When I read the above it appealed strongly to my feelings, and I was obliged to look back and note the different times when I have misunderstood children. Let me give one illustration:

When Huber was beginning to talk so as to make himself understood, he on one occasion had been behaving badly. I think his mother advised that papa should "talk" with him. He seemed (at least so it appeared to me) stubborn and contrary. The only response I could get in explanation of his bad conduct was that he "didn't care." I talked with him long and earnestly; but still he said, "I don't care." Then I presented the subject from another point of view. I explained to him the consequences of deliberate and persistent wrong-doing. He heaved a little sigh—a very little one—but still *insisted* he didn't care. Then I suggested punishment—told him there was not any thing else for a kind parent to do. Finally he enlarged his statement a little with something I did not quite understand. His little lip began to pucker up, and then I made out that he was trying to say, "Papa, in honest *troot* I don't care." He had understood me enough to know that I was doubting his statements. Among his little playmates he had heard somebody say "honest truth"—an expression they had probably used to assure their comrades that they were not joking or making believe. The statement was *really true*, and he tried hard, with his awkward little tongue, to make his father understand that he *was* really honest, and not telling an untruth; and I understood, too, that he was at least now really sincere, and that he, my darling boy, was not wicked and stubborn, but that he was a good boy, as he always had been; but what could the child mean by continually insisting he didn't care? A little careful questioning brought it out. By the expression "didn't care" he meant, "*I didn't mean to.*" It seems funny that the child should have got things so mixed up that he kept saying he didn't care when he was doing his level best to make me understand that he did not *mean* to be bad, and make mamma trouble. He could not *deny* his fault, and did not try to, for he knew that his parents knew he was guilty of just what he was accused of. He wanted to tell us, but his juvenile vocabulary was too limited to get into words that would indicate he did it by *mistake*, or without *thinking* of the consequences. Oh what a relief it was to fold my boy in my arms once more, and then it startled me to realize that I came pretty near punishing—yes, punishing a good pure-hearted, noble baby—for he was but little more than a baby—when he was entirely innocent of any willful offense or misdemeanor! At that time I breathed my little prayer, "Lord, help!" and if I did not make the prayer any longer it was because I felt that the dear Savior knew it included that he should help me through all my future life to be careful—oh so careful!—that I did not, in my constantly enlarging field of work, wrong any human being just as I had come so near grievously wronging my own child. As I go over the matter, recollection goes back, and I think of the many times when I have scolded severely, or made up my mind I would scold, when the offender was about as innocent as our own Huber.

A few days ago we were speaking about the annoyance of having so many of our helpers (more than a hundred in all) get around late to their work. Some of the firm advised fixing a penalty for being even ten minutes late. But I urged them not to do it. All such rules are so liable to punish or severely wound the feelings of some one who does not need any discipline at all, that I strongly objected.

"Let me collect the names of the delinquents, and try a personal talk with them."

The objection was made that we had tried that thing enough already.

"But let me talk with them just once more, and let them know I do this just before undertaking something more severe."

During the day I managed to talk with pretty nearly all who have been coming late; and when I closed my eyes at night, oh how glad I felt that I had had those little friendly talks! I presented the matter so quietly and kindly that each offender looked me squarely in the face, and smiled in return as I invited his confidence. We talked about taking off an hour for one who was fifteen minutes late; but how could I bear the thought of having one of those boys work for me half an hour or more without pay, just because he was late in getting to work? Even if it were true that it cost us that much to put up with their tardiness, I should feel guilty with even one copper of their money in my pocket. Some of the older ones who were late spoke of a sick wife at home, and no one to do the work. Some of the boys have widowed mothers. Another one could not get his breakfast in time. He either had to go to work without a good warm meal to start with, or else be late; and I can very well remember, even if it was years ago when I was a boy, that, if you wanted me to do good service, you would have to have me fairly fed to start with. May God help each and all of us who are older to remember the time when we were boys! May we (for *their* sakes) be boys again in heart for the time being!

A few days ago I finished my fifty-eighth year. I am getting toward sixty, and I discover that I like to have things quiet. The grandchildren come in occasionally; and as they are healthy and boisterous they sometimes come pretty near "raising the roof," it may be just as I come home tired out with many cares. They know very well that they can shout and tumble around, and have a big time when there is no one but grandma in the house; but I am afraid they are in the habit of looking a little suspiciously sidewise when grandpa comes; and just now I am taking the ground that the grandpas as well as the grandmas should be literally "houses of refuge," or cities of refuge.

In our business the complaint is often made that the boys and girls, especially the younger ones, do not talk enough. They do not explain things, and tell us of the difficulties that are in the way of obeying orders. Well, I am afraid we do not *invite* confidence. At times I am perplexed and annoyed by some habit or fashion these young friends have of doing things. After I have thought about it, however, and prayed over it, and then taken the time to have a good square talk with the offender, what a difference it makes! After I have made him feel I am his friend, and not always looking about for something to scold about, or to find fault with, after having broken the ice so that he feels he can give me his *confidence*, and talk freely, what a difference it makes! There are reasons for his conduct, that I had never thought of. Sometimes he has queer ideas of things that need to be set right. After each and every one of these talks, when I have made this boy or girl I did not know very much about understand I have a friendly interest in the welfare of both, how differently they appear afterward! With what cheerful and ready alacrity they set about helping me in that which I wish to accomplish! Saying "Don't do this," and "Don't do that," and "You ought to know better," and such like expressions does not make young people handy and helpful. It takes lots of time to explain, I know. But what are we here in this world for? May God help us all to keep in mind the thought that humanity is of infinitely more value, and more worthy of our time and pains, than all else that this world can furnish.

I had in mind in this paper speaking of places of refuge for grown-up children, but the subject is too great. A few days ago I read of a man who had been fourteen years in the penitentiary. At the expiration of that time, somebody on his deathbed confessed that the condemned one was entirely innocent. He had given fourteen of the best years of his life because he was unable to prove his innocence. The whole wide world had turned against him. There was no place of *refuge* where he could get justice. Perhaps he had a wife and children, and may be some intimate friends who knew of his unjust punishment. I wonder if such things happen very often. Let us try to imagine ourselves in his place at the time of his trial. It has seemed to me, in thinking over things of this kind, that, with my natural vehemence, I could convince people of my innocence. But sometimes this very vehemence is mistaken. People say he puts it on for effect. We are accustomed to boast of our country—its freedom, and of its laws; but yet there are many times when even the laws of our land seem to furnish no city of refuge. When we are sick we hunt up a doctor. If one doctor fails we get another; and we say, in this enlightened age of ours, "I am sure there must be a doctor who can manage this thing." But the doctors make mistakes, and fail as well as the lawyers.

Every little while we have to face the fact that death is just before us. Is there a refuge even then? May God be praised that He who created the universe has not left us alone when all human help has failed. There is a refuge —the dear Savior who said, "Whosoever liveth and believeth in me shall never die;" or, in the language of the Psalmist, "God is our refuge and strength, a very present help in trouble." If, then, we would have these younger ones believe in Christianity—if we would have them learn to put their trust in Christ Jesus when parent, employer, and everybody else seems to misunderstand, let us bear in mind that one of the surest ways to bring a soul to Christ is to invite the confidence of these younger ones. Employers are too often disposed to cut short abruptly any complaint from the one who is doing the work. Of course, people can not always agree. It seems a great many times best for employer and employee to let their relationship cease; but if it were only done after a friendly talk on both sides, so they could part friends, how much better and happier this world would be! I have urged the younger members of our firm to be careful about dismissing a man, with unkind feelings on both or either side. Talk the matter over pleasantly, and then bid each other good-by in a way that will leave the matter in good shape for pleasant business relations in the future if such should come about. Let every human being know that he can feel that, no matter what has happened, he can come to you in the future, feeling sure of your friendly sympathy and co-operation. Who has not experienced the value of a friend in time of need? and what a place of refuge it is in very truth when we have met unexpectedly just the kind of comfort we sadly need! Is this nation of ours, as we begin the year 1898, furnishing cities of refuge, not only for the people of our land, but for every burdened soul who is honestly and earnestly trying to do his duty? If not, then will you, dear reader, try a little harder to make your home and yourself a place of refuge to some burdened soul who has been unable to make itself fully understand amid this busy, rushing age of ours? And now may I, after all this preface, wish you a happy new year?

BIBLES FOR PREMIUMS.

The man who sees only evil and nothing good in the events of this rushing age is certainly getting a wrong view of things. I have been pleasantly astonished of late to see that pushing the business of offering Bibles for premiums seems to be taking the precedence of almost every thing else. Periodicals that one would hardly expect to give space to even a favorable mention of the Christian religion are offering Bibles as premiums with a vehemence and vigor that is astonishing, and the matter seems to be on the gain. The Bibles are beautiful, and, so far as I have been able to discover, they are even cheaper than those sold by the American Bible Society. The secret is, that the publisher agrees to take a very great quantity; and in this age of rapid and not only accurate but nice printing, great progress is being made. Our own children have been sending for magazines that we probably would not take except to get the beautiful Bibles offered. The combination reads something like this: A Bible worth $5.00, clubbed with a magazine worth $1.00, and both together for only *$3.00*. So you get a $5.00 Bible for only $2.00, or a less sum. Now, this is all right, if the people who are pushing the Bibles do not stretch and exaggerate in their urgent entreaties to have every one buy. I am glad there is money in our country to buy Bibles in such quantities, and it rejoices my heart to see every man, woman, and child (I guess that is right, is it not?) have a beautiful, convenient, and handy Bible. Some kind friend has just mailed me a beautiful edition of that quaint old book—yes, it is 480 years old—called "The Imitation of Christ," written by Thomas à Kempis long before America was discovered. In the very first chapter I read:

> If thou knewest the whole Bible by heart, and the sayings of all the philosophers, what would it profit thee without the love of God and without grace?

I hope and pray that God's grace may find its way into the heart of every one in our land who has in any way become the possessor of one of these beautiful Bibles I have been talking about.

Health Notes.

SHALL OUR DEPARTMENT OF AGRICULTURE ENCOURAGE THE TOBACCO INDUSTRY?

A few days ago a bulletin was received from Washington, D. C., offering prizes from $15 to $150 for articles on growing tobacco, and preparing the crop for market. I took the liberty of writing a remonstrance. Below is a reply:

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF SOIL,
WASHINGTON, D. C., Nov. 30, 1897.

Mr. A. I. Root:—Your letter of November 27 has been received, criticising me for publishing bulletins on tobacco. Tobacco is one of the staple crops of large areas of this country. The people raise it, and find good markets for it, both in this country and abroad. In the same way hops and barley are raised for beer; corn and rye are used for the manufacture of distilled liqnors; apples are used for brandy, and grapes are grown in great quantities for wine. I do not approve of the excessive use of any of these beverages; but my personal feeling in the matter has nothing to do with my official work of investigating the soils adapted to particular crops in the United States which the people elect to grow.

If tobacco is grown, it is better to raise good tobacco than poor. Good cigars are less harmful than bad ones. The finer types of tobacco for cigarettes, chewing, and smoking, are far better for the morals and material welfare of the people than poor grades, which are produced in such quantities. If for no other reason than this, the Department is fully justified in efforts to improve the quality of the tobacco grown. It is conducive to both the health and morals of the people.

I have never thought of advocating the use of tobacco in any of the bulletins I have published. This is a matter for the people themselves to decide upon. As an individual, I am an advocate of the moderate use of the cigar and pipe. They have done much good. So has the horse and so has the bicycle, yet we all know that much harm has come from both of these. We want to be consistent and thorough, however, in this as in other matters, and have as good tobacco as can be raised, and raise it in the most economical and profitable manner.

Respectfully,
MILTON WHITNEY,
Chief of Division.

Permit me to make a little objection to the arguments used above. Corn, rye, apples, and grapes are all used for food, and were *designed* for food, evidently, by the great God above. They do not require an almost complete transformation of the body to keep one from throwing them up when eaten, nor do they produce, in a natural state, delirum tremens, cancerous sore throat, color-blindness, and enough other evils to fill the box of Pandora full to overflowing. *Tobacco is a poison.* It has no legitimate use, that I know of, unless it is for poisoning insects that annoy the cultivator of the soil. I did not know before that *good* cigars are less harmful than *bad* ones. By the way, where has the experiment been tried on a large scale, to prove conclusively that "good" cigars are better than "bad" ones? What is "good" tobacco except that which has more nicotine in it than some other? and would tobacco be used except for the nicotine, any more than liquor would be used except for the alcohol in it? Is not the very thing that makes tobacco so dangerous to the human system the very thing that commends it to the officers of our government? I suppose the way in which good tobacco is conducive to both health and morals is in substituting it for bad tobacco. Whether the writers of said bulletin thought of advocating the use of tobacco or not, it seems to me that these government bulletins, with the premiums offered for articles on the cultivation of tobacco, do advocate pretty strongly the use of it.

I confess the comparison of the horse and bicycle to the tobacco habit seems to be rather wide of the mark. Horses and bicycles sometimes do harm—or, rather, men do harm with them; but I do not see where the "sometimes" would come in in the matter of tobacco, as there seems to be *no* let up in its bad effects. And may I be permitted to call attention, not only of Milton Whitney, but also of the Department of Agriculture, to the position taken, almost without exception, by the teachers in our land, our college professors, the medical fraternity, and last, but not least, by the mothers of the boys? Is it not proper and fitting that the mothers and teachers should have a voice in regard to it? Of course, I obtained permission to use the above letter for print. In connection with the permission came the following, which I have taken the liberty to head—

"WHO IS RESPONSIBLE?"

I have no information in regard to the use of opium in cigarettes. I know that it is a common idea that such things are used, but it has never come within the province of my official work, and I have never made any official investigation of the matter. Dr. H. W. Wiley, Chief of the Division of Chemistry, would be the man to consult in regard to adulterants found in cigarettes. I will only say that it is not necessary to use such substances, nor to use flavoring of any kind, as the natural leaf, if of first-rate quality, is far better, to my mind, for a light smoke in pipe or cigarette, than any of the manufactured brands. What is put into the tobacco, therefore, is merely to meet a demand of the people. It is a good deal like the newspapers of to-day. I do not myself believe in the enormous size of the Sunday papers and the free use of illustrations; but they seem to appeal to the general public, and seem to be necessary, for nearly all the papers are issuing enormous illustrated Sunday editions. Public sentiment is the only thing which can modify the practice. Very truly yours,

MILTON WHITNEY,
Chief of Division.

You see, friends, our Agricultural Department, or at least the writer of the above, casts the responsibility back upon the people; and our electric railways are at the present time evading the responsibility very much in the same way. They say their business is to carry the people; and they certainly would never think of running their trains on Sunday if the people did not demand Sunday trains. While there may be *some* truth in this, and while the fault is doubtless partly ours in wanting to grow tobacco and in wanting Sunday papers, or in asking to be carried about on the sabbath day, I still insist that the Agricultural Department of the United States should have something to do in the matter of advising and encouraging *wholesale* industries, such as growing strawberries, and *discouraging* an industry that seems almost if not altogether baneful and bad in its final results. Certain it is, the indictment against tobacco is a long and fearful one; but not a bit of human suffering can be traced to the fact that a man *never began its use.*

MEDICINES FREE OF CHARGE.

In many of your home papers you will see a whole column advertisement, with pictures all along down the reading, representing those who have been more or less deaf for years, and claim to have been cured. After giving all these testimonials, at the bottom of the column we read, "Medicines for three months' treatment free." When I saw this in so many papers I wondered how this great doctor could pay such enormous sums for advertising something to give away. One of our correspondents has posted me, however. He wrote for the free medicines, and received a very nice letter which looks very much as if it were written with a typewriter, but it is not. In this letter he says he does furnish the medicines free of charge, but adds that they can not be applied without an instrument called the air-medicator, to throw the medicine up through the nostrils to the organs of the ear. The medicines and instruments are worth $17.50; but if you send right away you may have the whole for $7.50, the price of the medicator alone. Please notice, I am not at present prepared to say that this doctor does not cure or help deafness; but I want to protest against this whole way of doing business, and advertising one's self as a philanthropist who cures disease just for his love for humanity, when the truth is you must pay $7.50 for an instrument that may not cost more than 25 cents. Our friend wants to know if I would advise him to send the $7.50. Certainly not. I would not send money to any doctor who advertises treatment free, and then gets around it this sort of way.

HIGH PRESSURE GARDENING

OUR GOVERNMENT WEATHER BUREAU.

I have said a good many kind words for the *Rural New-Yorker*, but I have now found one thing in it I want to scold about a little. See the following:

> "Papa, how do the people in the Weather Bureau find out what kind of weather we are going to have?" "I didn't know that they did, my son."—*Yonkers Statesman.*

I do not believe it is well to encourage people, even by way of a joke, to class the Weather Bureau with the weather-quacks such as Venner, Hicks, etc. I not only watch the weather daily but hourly. With my electric lamp I look at the barometer just before going to bed and the first thing on getting up; and during the month of September our Weather Bureau, in making over 50 predictions, did not make one that could really be called a mistake; and during the month of November, when it rained almost every day, and the weather was changing every hour or two, they mapped it out from 24 to 48 hours ahead almost as well. One who takes pains to inform himself in regard to the machinery used by the Weather Bureau, and the results accomplished, can go ahead and make his business calculations dependent on the Weather Bureau predictions, and rarely have a mishap.

One strange thing in regard to weather predictions is that many people, and perhaps most of them, will regard a Hicks or Venner as infallible for a whole year ahead if he happens to make a prediction that seems to be even partially fulfilled, and yet fails on every other occasion ; while if the Weather Bureau seems to make a mistake in one locality, on one occasion, one day, it is held up as being wholly unreliable every day in the year. The Weather Bureau does not pretend to tell what "the weather is going to be." It simply tells what it actually is at certain points, and what it probably will be at other points when existing and moving conditions reach such points.

SUBSOILING.

Since writing on page 895, last issue, it has occurred to me to mention that, in our beds made on the plan of the new agriculture described in our little book, "What to Do," we have for many years grown squash and pumpkin vines of enormous vigor and productiveness; and while making our potato-cellar we were obliged to go down to the bottom of one of these reservoirs for water, and there we found pumpkin and squash vines three and even four feet deep, with a lot of fibrous roots drinking up the water that remained there during a severe drouth. These vines during the hottest and dryest weather were growing like Jack's beanstalk, climbing over every thing, and making squashes and pumpkins at an enormous rate.

GINSENG CULTURE.

Here is what Greiner says about it in the last issue of the *Practical Farmer*, and I feel sure he is about right. If you want to try a few plants on a small scale, go ahead, but do not put much time or money in it just yet.

> Ginseng culture has not yet passed the experimental stage. Thus far only those who propagate ginseng for seed and roots (to sell for planting) are the ones who recommend it as profitable. Perhaps they find it so as long as they have sale for the mentioned products.

GROWING RHUBARB IN FLORIDA, FROM ROOTS SHIPPED FROM THE NORTH.

On page 396 of GLEANINGS, where you are speaking of a "Book on Rhubarb Culture," I find the following: "One thing I was pleased to learn was to find that, like asparagus, rhubarb must be frozen first, and then thawed out by an artificial spring, or a real one, before it will grow successfully. This tells us why so many failures have been reported in regard to growing rhubarb in Florida. It can be done successfully, however, by shipping roots south after they have been once frozen up."

With your permission, Mr. Editor, I will give my experience in taking rhubarb-roots from the North after they had been frozen, and planting them in Florida. Three years ago, about the last of December, as I was about starting for Florida a friend came in, saying, "I want to make a contribution for Florida; here is a basket of rhubarb-roots, and I want you to take them with you and plant them there." I said, "My baggage is all gone, and it is only twenty minutes to train time, and I don't see how I can take them." Seeing an empty shoe-box I filled it with the roots, taking them with me.

While stopping at Pensacola, waiting for a boat to cross the Gulf of Mexico, I said to my landlady, "This box contains rhubarb-roots that a friend brought me after my things were packed." She said, "Oh ! give me one—just one root. I want to see if it will grow here. When I lived at St. Andrews, I planted rhubarb a dozen times, and they grew nicely. Always, about the time when I contemplated making a pie, I would notice the leaves falling over upon the ground. Digging down, I never could find any root, and I want to see if it will be the same way here."

On my arrival at my winter home I planted my rhubarb-roots in this way. In order to outwit the moles or salamaders from eating the roots, I dug holes and lined them carefully with broken window glass; filled them with rich compost, and planted them, covering the surface with oyster-shells, with a little space open above the crowns. The weather was warm and damp, and in a short time the leaves appeared, growing finely. I watched them with much interest, and one morning saw the leaves lying flat upon the ground. I could not discover the cause; there was no evidence of either worms or moles; the roots had disappeared. The ground where the rhubarb was planted was formerly hammock, covered with scrub oak and saw-palmetto. It seems to me I was told that rhubarb would live on ti-ti land, but I am not sure of it. I've never seen any of it growing.

My experience with asparagus in Florida has not been flattering. I fertilized heavily, and cultivated carefully; and when the stalks appeared they were small and spindling. It may do well on ti-ti land, or where the ground is wet by tide.

Peoria, Ill. MRS. L. HARRISON.

This seems very strange indeed. My impression was that our good friend Mrs. H. had got at the truth of the matter in suspecting that some Florida animal had eaten off the roots; but her last experiment would indicate that they just rot. Now, why they should rot down after they have commenced in the South is very queer. My impression is that several parties to whom we have shipped barrels of roots have made at least a tolerable success with the undertaking.

THE BOVEE POTATO COMPARED WITH THE NEW QUEEN, ETC.

Some little time ago the *Rural New-Yorker* suggested that the above two potatoes were quite similar. I wrote our Experiment Station in regard to it, and they replied as below:

Mr. Root:—I wish to call attention to one fact concerning the Bovee potatoes which we sent you. As you probably know, they were grown from seed planted about July 1st. I find that late-grown potatoes have a different appearance from those of the same variety grown early in the season. Wherever there is the least tint of red on the skin it is always deepened in the late-grown potatoes. The Bovee is not quite white, and you will find those sent you are nearly rose color. I mention this because you may hear from some of your customers who doubt the genuineness of the seed.

Regarding the similarity of the Bovee and the New Queen, I think that the New Queen is longer than the Bovee ; and if you have a chance to compare the two I hope that you will note this point. It is not always safe, however, to compare potatoes grown on different soils, and I will get some New Queen next season so as to grow the two alongside.

In our trials of jadoo and muck alongside there is no essential difference in the growth of plants in the two. If there is any difference, the plants in the muck are a little ahead. We are not through yet, however.

W. J. GREEN.

Experiment Station, Wooster, O., Dec. 20.

I myself have noticed that potatoes planted in July have often given a crop that looks quite different from the spring-planted ; but, so far as I have experimented, the late-grown potatoes are, as a rule, superior. The New Queens are generally somewhat longer than the Bovee, especially if spring-planted ; and I still insist, as I have all along, that the New Queen as an extra-early potato has not as yet been recognized as it deserves. It has a sad fault of sprouting in the spring almost in spite of you, before almost any other potato. I have not noticed yet whether the Bovee shows this peculiarity or not. I will watch and report.

Now in regard to the last paragraph, relative to the jadoo fiber. I must confess it gave me a sort of shock, as I have several times written with much enthusiasm in regard to it; and the suggestion that the manufacturers made in regard to growing potted strawberry-plants has been worth to me all I ever invested in it — perhaps half a ton in all. A good many times it struck me that it not only had a close resemblance, but acted in many respects exactly like muck from certain swamps. If it is really true that the chemicals they combine with it add nothing to its value it will be only another illustration of how often we are carried away by some new thing when it is no better than what we have all around us, and always have had, that costs us nothing. We pay great prices for some new medicine, and it performs wonderful cures; but later on we discover that, had the bottle contained pure water, just such as we drink every day, we should have been just as well off. What a sad reflection on humanity! Perhaps we had better wait a little, however, for it is not yet *fully* demonstrated that jadoo fiber is no better than swamp muck. On Johnson & Jordan's celery-farm they mix swamp muck with stable manure, throw it in great heaps, and let it ferment; then they have a material for growing their little celery-plants in boxes that is certainly superior to the muck right from the swamps. If friend Green has not tried the jadoo fiber for potting strawberry-plants it is my opinion that the muck alone will not enable the plant to stand and grow through a long dry spell as does the fiber. I confess we had no good muck at hand, so we did not compare it side by side with the fiber.

Since the above was in type I have found something in an old *Rural New-Yorker* that gives the Bovee a pretty big recommend. It is an editorial notice too.

> ATTENTION, POTATO-GROWERS!
>
> Through the potato trials at the Rural Grounds, the Bovee first became known to the public. This led to some correspondence with a leading seed firm which, after trials of its own, purchased the entire stock, and purpose to offer it in small quantities in its 1897 catalog not yet sent out. Our object it writing this note is to call attention to a potato which, from our own trials, we believe to be at least ten days earlier than the Early Ohio, a larger yielder, while the tubers are as shapely as those of the Freeman, and more uniformly so, and of the first quality. We want our readers to try the Bovee in a small way. We shall soon allude to it again with fuller particulars as to yield, where it may be purchased, etc.

Will the *Rural* please tell us whether they would at the present time give the Bovee such a strong recommend?

SCABBY POTATOES; SOME MORE SUGGESTIONS IN REGARD TO GETTING RID OF THEM.

> Before planting next year spread your potatoes out in a dry, well-lighted room, for at least three weeks. This will kill the scab germs—at least it does for me. If you plant on scabby ground next year, give part of it a dressing of apple pomace, and that will kill the germs that are in the soil, I believe. I had a little strip across one end of a field that was full of scab germs; and where I put rotten apples on it last winter the potatoes were clean this year. E. TULLY.
>
> Penza, O., Dec. 12.

The first plan, of spreading potatoes out, is new to me; but, come to think of it, all of our late-planted potatoes that are entirely free from scab have been spread out in this very way. Last season we moved them up into the barn just as soon as all danger from freezing was past. There they were left exposed, spread out to the light, through April, May, and many of them went through the month of June. If our readers will turn back to page 787, they will see that Alva Agee suggests that an acid soil will prevent scab; and we all know pretty well that alkalies, such as lime, ashes, etc., encourage scab. Now, if apple pomace will not make the ground sour I do not know what will; and friend Tully has discovered that, where he puts the pomace, the potatoes are free from scab. In many localities, most seasons, apple pomace can be had very cheaply. If others have tried this, and have noticed any similar effect, will they kindly report?

DECEPTIVE ADVERTISEMENTS.

Look out for Borden & Co., who advertise a good razor for 10 cts. When you get only a cake of soap for the 10 cts., and write them, remonstrating, they will tell you that, if you will look at the advertisement closely, you will see they offer only a cake of *soap* for a dime. You can safely call the whole of them humbugs and swindlers when they in their advertisement *purposely* mislead.

SELLING RECIPES, ETC.

Here we are again. Circulars are being sent out to bee-keepers, containing the following:

> I have found a way to prevent honey from candying, even if kept where the temperature is below zero. Nothing is put into the honey, and the process is very simple, inexpensive, and very little labor is required.
>
> Bee-keepers who dispose of their honey to grocerymen and by peddling will readily appreciate the importance of this invention. It is a boon to all who sell or purchase honey.
>
> To those who send me $1.50 I will send full directions for the process, but only on condition that a promise is made that they do not divulge the method until the year 1903.

In reply to the question as to what we think about the thing, I would say, do not send a copper to anybody who offers to divulge some secret process for a sum of money, and asks for a promise not to divulge. Of course, I do not know what the secret is; but I do know that no valuable information has ever yet come in any such way. Our experiment stations will back me up in this statement. I would send $1.50 myself, but I can not give any such promise. Whenever I find out any thing valuable I will give it to my neighbors and everybody else who may be benefited by the knowledge I possess. It would be strange if all the bee-journals we have now and all that have been published could not give their readers the simple thing that the advertiser expects *each individual person* to pay $1.50 for.

SELLING RECIPES, OR INFORMATION HOW TO GROW CROPS, ETC.

I find the following in a recent number of one of my favorite agricultural periodicals :

> **HUBBARD SQUASHES** and **Early Out-door Cucumbers** the money makers easily raised by my method. Send one dollar for instructions. HENRY M. BROWN,
> Gen'l Del., Indianapolis, Ind.

I sent a dollar right along promptly. After something like two weeks I received the following, written with a pen, as the writer had had some trouble in getting them printed in time :

> HUBBARD SQUASHES AND EARLY OUTDOOR CUCUMBERS. HOW TO GROW THEM SUCCESSFULLY.
>
> I have spent a great deal of time and money experimenting with these plants, in order to have cucumbers early, and also to outwit the bugs, which I find in the patch early and late. All coverings for plants which I have tried have some faults. Some are too heavy and expensive ; others are too easily destroyed.
>
> I find the following to be as near perfection as any I have tried ; and if the first cost is a little more than some others it is economy in the long run, and the frames can be closed when not in use, and will occupy but a small space.
>
> I prepare a "tent" as follows, using plastering lath. Take a lath, and saw through the middle full length ; this will make 6 pieces 8 inches long and 4 pieces 12 inches long. Sharpen each of the long pieces at one end ; lay two of these parallel with each other, about 8 inches apart ; take one 8-inch piece and nail it across and flush with the top of the two ; also one 8-inch piece nailed on 8 inches from the top. This leaves 4 inches to push into the ground. Thus you have a frame 8x8 inches in width, and points 4 inches long.
>
> Make another frame the same size. Lay them on a smooth surface, blunt ends together, and tack muslin over these two frames. The muslin will answer for hinges, that you may be able to bring them together. Thus, to each tent you will have to make one piece of muslin 9x18 and one 9x9 inches square, as a yard of muslin will make these dimensions, and have the selvage turn under to hold the tacks better.
>
> Cut the latter from corner to corner, and tack on the ends of the frame, after bringing them together to the desired width, to accommodate the three-cornered piece of muslin. This frame is to put over your hill after you have planted your seed. I plant seed about the 20th of April. Don't try to raise cucumbers or squashes unless the ground is quite rich, especially for squashes, for, the thinner the soil the less chance you will have for success. Prepare the soil well, and have it fined down. I plant 4½ feet each way. I desire to plant this close, as the vines completely cover the ground, and thus protect the cucumbers from the sun.
>
> Push the frame down into the ground over the hill, and completely up to the frame, so the bugs will not get under. This arrangement will protect them from bugs, frost, and cold winds, until all danger from frost is over, which in this latitude is about the 20th of May.
>
> Have your squash ground prepared, and from the 20th of May to the 1st of June plant your seed. Take your frames off the cucumbers, and put on squashes, and leave on until they outgrow the frames. After you remove the frames from the squashes put tobacco dust around the stems ; sprinkle with kerosene emulsion quite often, on the stems, under and over the vines ; and if you are diligent I think you will be successful after following directions carefully.
>
> Indianapolis, Ind. HENRY M. BROWN.

Now, friends, not only *readers* of agricultural papers, but the editors, what do you think of this kind of business? If the above had been illustrated with appropriate cuts, and put in an agricultural journal, it might have been of benefit to ten thousand people — that is, if they had never heard of the thing before ; and it would not have cost these ten thousand people a cent apiece. This Mr. Brown wants a *dollar* apiece from each person. The dollar ought to pay for quite a treatise on growing squashes and cucumbers. Why ! Gregory's squash-book, that treats on every thing pertaining to squash-growing, costs only 25 cts., and it is worth more than twenty essays like the above. Let me suggest that a good editor should write back and say, "Mr. Brown, what is it you are going to furnish our readers for a dollar? Let us see it before we make ourselves a party to this scheme of yours." Or what is to hinder any editor from sending on a dollar, and then giving the information to all his subscribers, just as we have done? Like all other recipes offered for sale in this way, the whole thing is old, and comparatively well known. A still better thing is the squash-box that protects from frost as well as from bugs ; and the wire-cloth bug-protectors we have sold for years are more substantial, and we think they are cheaper in the end, than this rigging made of cloth and sticks.

Right here I notice an item in that bright, wide-awake little paper, the Philadelphia *Farm Journal*. Here it is :

> We place Klondike get-rich-quick mining companies along with die-slow-but-sure quack doctors, and reject the advertisements of both. Our folks have no use for either.

You see, friends, there is somebody at the head of that journal who is a little particular about the kind of advertisements they put before their readers.

CAST THY BREAD UPON THE WATERS.

The writer of the letter below wrote me, telling of their struggles to raise a debt on their little church, and asked if I could find it in my heart to help them a little. I replied that calls had been so numerous for mission work and for various similar purposes that we had been reluctantly obliged to call a halt, but that we would, however, donate to the cause two copies of GLEANINGS for 1898 ; then if she could find two bee-keepers or others who were sufficiently interested in their church in their neighborhood, who would take them off her hands at $1.00 each, she would have $2.00 to help them along. Below is her reply :

> *Dear Mr. Root:*—Inclosed find the address of two subscribers whom I had no trouble to get. I don't know of any one in our neighborhood who takes GLEANINGS except ourselves, yet it goes from house to house, and even sometimes to the church and Sunday-school and Epworth League.
>
> In behalf of the aid society I do send you our sincere thanks, and pray that those two copies will bring you fourfold in blessing, both temporal and spiritual.
>
> Beallsville, O., Dec. 15. MRS. A. P. DANFORD.

It always does me good to know that our journal is passed around from neighbor to neighbor, even if it should result sometimes in excusing people from subscribing themselves. I think we should "do good and lend, hoping for nothing again," even with our favorite family paper.

In referring to A. T. Cook's catalog, in our previous issue, I overlooked what he says about tobacco. Well, here is what he says, and I hope the officers of the U. S. Department of Agriculture will read it:

> Don't ask for tobacco seed. I do not believe it right to grow the vile stuff, to sell, or use it.

The Bee-keepers' Review

Closes its Tenth Year with Substantial Improvements.

Increase in Size.—Beginning with the December number, eight more pages are added, making thirty-six in all.

Better Paper.—Heavy, white, sized, and super-calendered paper is used in printing the December number, and its use will be continued.

New Type.—The December number is printed with large, clear, *new* type of that beautiful style called the Ronaldson.

A Beautiful Cover.—The cover is of extra-heavy, smooth, cream-colored Paradox, printed in that warmest and richest of all colors — claret.

A Fine Frontispiece.—As a frontispiece, printed on 80-pound Ivory enameled paper, is a half-tone, made from a photograph, of a comb badly infected with foul brood. A more perfect picture of such a comb has never been made. In short, the Review will now compare favorably with the high-class magazines, as regards typographical neatness and beauty. As to the value of the information it contains, here is a partial list of

CONTENTS FOR DECEMBER.

Foul Brood.—Many descriptions of foul brood have been published, but none the equal for detail, exactness, and clearness, of that given by Mr. R. L. Taylor in the December Review. With this description, aided by the accompanying engraving above mentioned, no one need fail in positively identifying foul brood. Not only this, but Mr. Taylor also gives plain, simple, and *exact* methods for getting rid of the disease.

Mr. M. M. Baldridge also describes a novel method for getting the bees of a foul-broody colony into a new hive, and free from the disease, by means of the bee-escape. He also tells how to disinfect foul-broody hives by burning them out with kerosene oil.

The Plain Section.—Mr. L. A. Aspinwall has used this style of section for several seasons, and in the December Review he enumerates its many advantages, and illustrates and describes the style of super and separator with which he uses it. He also illustrates a simple machine for cleaning propolis from sections of this style, nearly as rapidly as they can be handled.

First-Premium Wax.—The finest wax, that of a clear, pearly "dandelion yellow"—wax that for two years in succession took first premium at the Wisconsin State Fair, was made by E. Ochsner, and in the December Review he tells exactly how it was rendered.

Shipping Comb Honey.—The bee-keepers who never have cause to mourn the loss of honey broken in shipment would be more plentiful if all could read in the December Review of the simple yet novel method employed by J. E. Crane to prevent the trucking and "dumping" of heavy crates of honey.

But there is not room to tell more; better send $1.00 for the Review for 1898, and receive the December number free; or, if you prefer to see that issue before subscribing,

Send Ten Cents, in silver or stamps (either U. S. or Canadian), and the December number will be sent you, and with it will be sent two or three other back numbers. This will give you a fair idea of the Review, and, if you then wish to subscribe, the 10 cents that you have paid may apply on the subscription. A coupon will be sent entitling you to the Review for 90 cents, if sent during 1898.

W. Z. HUTCHINSON, Flint, Mich.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by

Emerson T. Abbott, St. Joseph, Mo.

Write for *free sample copy now.*

Prosperity.

It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
FREMONT, - - - MICHIGAN.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

Queens. Untested queens, 50c each; tested, 75c; Breeders, $2. Either leather or golden. My golden breeders breed all 5-banded bees.

W. H. LAWS, - Lavaca, Ark.

No cheap Queens to sell; but the best.

Golden 5 band, or 3 band from imported mother. Untested, 75 cts.; tested, $1.00.

L. BEAUCHAMP, Box 613 San Antonio, Texas.

In writing advertisers mention GLEANINGS.

Headquarters in the West for Bee-keepers' Supplies.

The Largest Business of the Kind in the West.

Thousands of hives, millions of sections, tons of foundation, and quantities of other stock sold the past season.

We sell the ROOT GOODS AT THEIR FACTORY PRICES, AT DES MOINES, IOWA.

1898 finds us in enlarged quarters with the largest stock and greatest variety of goods ever offered. All the latest improved up-to-date goods kept in stock.

ORDERS SHIPPED PROMPTLY. Estimates cheerfully given. Catalog free. Address

JOSEPH NYSEWANDER, Des Moines, Iowa.

BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture Tanks of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address **E. KRETCHMER, RED OAK, IOWA.**

When writing to advertisers please mention GLEANINGS.

BETTER THAN KLONDIKE GOLD, $3 60 FOR $1.

N. Y. Weekly Tribune, greatest 20-page newspaper in U. S.	$1.00
Young People's Weekly, religious, colors, 12 pages, size Youth's Companion	.60
Farm Journal, best 24 page farm paper; most popular in the United States	.50
Poultry Keeper, 20 pages, printed in colors. It leads; others follow	.50
P. K. illustrator No. 1, 100 illustrations, poultry-houses, incubators, brooders, etc	.25
P. K. illustrator No. 2, 75 illustrations, artificial incubation, care of chicks, etc	.25
P. K. illustrator No. 3, poultry diseases, gapes, roup, cholera, moulting, etc	.25
P. K. illustrator No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $1 we will send these 4 papers one year and 4 books, postpaid, grand total	$3.60

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

When writing to advertisers please mention GLEANINGS.

SPECIAL NOTICES FROM BUSINESS MANAGER

WIRE NAILS BY THE CARLOAD.

We recently received a carload of 235 kegs of nails, which makes over 725 kegs bought in 1897. We have an order in for another carload to be delivered soon. We are taking advantage of low prices before the wire trust is in operation. The quantities give some idea of what it takes to keep us going for our own use as well as to supply nails with every thing we sell that needs them. We also received recently a carload of tin plate.

HONEY MARKET.

Orders for honey have been rather slow for the past two weeks, but we anticipate a brisk demand from this date. We are well supplied with all grades of extracted in 60-lb. cans at prices last quoted. Our light amber sage honey is especially desirable. This is nearly as light as clover, and is very thick and heavy. Price per case of 120 lbs., 6 cts. per lb.; 5-case lots at 5½ cts. per lb. All grades of comb honey on hand ready for prompt shipment. See Dec. 1st GLEANINGS for schedule of prices, or write us if you haven't a copy of that issue.

CARLOAD SHIPMENTS.

We have already begun making carload shipments to dealers for the season of 1898. This time last year we had shipped only one carload, while we have loaded so far seven cars of bee-keepers' supplies, and have orders booked for many more. During December we have printed for J. M. Jenkins, of Wetumpka, Ala., one of the bee-supply hustlers of Dixie, 7500 catalogs, and sent him a large carload of miscellaneous stock which he does not make in his well-equipped factory.

We have also sent a large carload of hives, frames, etc., to D. M. Edwards, Uvalde, Tex., and expect to send him another one this month.

We have sent one carload to L. A. Watkins Mdse. Co., Denver, Colo., and two carloads to The Abby Hardy Co., of Grand Junction, Colo. These two firms represent us in Colorado, the one east of the Rocky Mountains and the other west. We have shipped a car to Buel Lamberson, Portland, Ore., who represents us in Oregon and Washington. We are also loading a car for The Union Hive and Box Co., Los Angeles, Cal., who will this season represent us in Southern California.

NEW HIVE COMBINATIONS.

Referring to Trade Notes where we give descriptive matter from our forthcoming catalog, we desire to say that the super taking 4¼x4¼x1½ plain sections with fences is designated by the letter P following the hive number, as AD52P–8, or AD64P–8, and sells at the regular price in table, page 7 of last year's catalog.

The fence for this super will be designated P fence, instead of H fence, as stated in last issue. The old-style super, with sawed slotted separators and slotted section-holders, will be designated S, following the hive number, and the fence for use in this super, where you desire to use plain sections in connection with the old slotted section-holder, will be designated S fence instead of J, as noted in last issue. Of course, these S fences are not to be sent out with new supers, but are only for those having this style of supers who wish to try the fences and plain sections. The Ideal super, with sections 3⅝x5x1½, is designated by I following the hive number; as, AD52I–8. The price will be the same as for the P or S super, and hives taking same, as listed in the catalog of last year. Fences for this super are designated as I fences.

The 8-frame super with 4x5x1⅜ sections crosswise, will be designated by L following the hive number, and fences for this arrangement are designated L fences. The price of this arrangement will be the same as the others. Those who wish to try the 3⅝x5x1½ or 4x5x1⅜ plain sections, in regular supers which they now have, can order the rim with slats and fences, and designate the same as RI for the 3⅝x5 section, or RL for the 4x5 used crosswise. The price for this will be 10c each less than for the regular 1, 2, 3, or 4 super as listed in the catalog. For instance, you wish to order rims, slats, and fences with 3⅝x5 sections, and starters complete for 10 regular 8-frame supers, which you now have, you will order 10 4RI–8 supers, price $2.80.

Almost Given Away to Introduce "Good Luck" Collection.

THE indispensable, wide-awake, money-saving FARM JOURNAL, one year, with large $1 box of useful garden seeds, containing large packets of the VERY BEST Beets, Cucumbers, Radishes, Tomatoes, Beans, Melons, Giant Prize Pansies — fifty lovely varieties, Vegetable Peach—a vegetable wonder, delicious for preserves, pies, etc., matures anywhere in 90 days—and lots of other choice vegetable and flower seeds, including the best novelties. ALL THE ABOVE sent postpaid with my illustrated catalog for only **30 Cts.** (cash, money-order, or stamps).

Address

A. O. Cook, Seedsman, Hyde Park, N. Y.

In writing, mention GLEANINGS.

Rootville Wheels Cheap.

ONE $75.00 AJAX.

Gent's wheel, belonging to E. R. Root; long cranks, pneumatic saddle, large tires, 70 gear, cycloidal sprockets, finished in blue; very easy running; as good as new, nearly. $30.00.

ONE COLUMBUS, $75 MODEL.

Belonging to J. T. Calvert, 6¾-inch cranks, large tubing, flush joints, divisible cranks, cycloidal sprockets; ridden but little. $30.00.

ONE $50 LADIES' AJAX.

Belonging to Miss Constance Root; as good as new; ridden scarcely more than 10 miles. $25.00.

ONE $100 CLEVELAND.

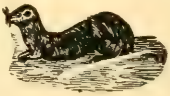
Belonging to A. I. Root—the easiest-running wheel, he says, he ever owned; wood reversible bars, clincher tires, keyless cranks, large tubing, flush joints; in fine running order. $42.50.

ONE $150 COMBINATION TANDEM.

Belonging to E. R. Root, made by the Remington Arms Co.; ridden but little, not over 50 miles all told, and almost new; long cranks, wood handle-bars, large tubing, long reinforced drop forgings; in fact, the strongest and most rigid tandem ever built, for only $65.00.

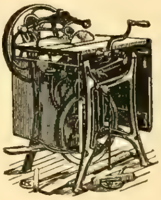
The Rootville folks always buy the latest bicycles every season; and, desiring to be strictly up to date with all the latest improvements, we offer our wheels cheap. If you want one of these bargains, speak soon. Catalogs and fuller particulars given on application.

THE A. I. ROOT CO., Medina, Ohio.



Send for free price list of
White and Brown Ferrets,
Pure Italian Bees, and
Scotch Collie Pups.
N. A. KNAPP, Rochester, Ohio.

In writing, mention GLEANINGS.



One Man with the
UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei

Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

In writing, mention GLEANINGS.

CONVENTION NOTICE.

The annual meeting of the California State Bee-keepers' Association will be held at Los Angeles, on Monday, Jan. 10, 1898, commencing at 2 P.M.

The California Bee-keepers' Exchange will meet in annual session at Los Angeles, on Tuesday, Jan. 11, at 2 P.M. A full attendance of members is desired. Mr. Thos. Wm. Cowan, editor of the *British Bee Journal*, will be present. The attendance of Thomas G. Newman is also promised. A. J. COOK, Pres.

J. H. MARTIN, Sec.

COLORADO APIARISTS, TAKE NOTICE.

The Colorado State Bee-keepers' Association will hold its annual convention in Horticultural rooms, State Capitol building, Denver, January 17 and 18, 1898, beginning at 9 A.M. Let every apiarist in the State, who can, be at that meeting. Whether you can be at the meeting or not, write to me just as soon as you read this. First, I want your *name and address*, very plainly written. It is very likely that the association will have something to communicate to you that will be to your and others' interests, so we want your name and address sure. With the address tell me what topics you want discussed at the meeting, or any other business you want transacted. Any others—persons or associations—having business with this association will please communicate with our State Secretary, Mr. Frank Rauchfuss, Elyria, Col., or with myself. R. C. AIKIN,

Pres. Col. State Bee-keepers' Association.

Loveland, Col.

KIND WORDS FROM OUR CUSTOMERS.

Please find inclosed $1.00 for GLEANINGS for 1898. I could not do without it—must have it. It is getting better every day. FRED. HOLTKE.

Newark, N. J., Dec. 7.

A few days ago I sent you $1.00 for GLEANINGS, and the 1st number, Nov. 1, is here. The contents were so interesting I did not rest until I went clear through it, advertisements and all. H. W. BASS.

Orford, N. H., Nov. 17.

ARE OUR AGRICULTURAL PAPERS RESPONSIBLE FOR THE CHARACTER OF THEIR ADVERTISEMENTS?

You are doing exactly right. It is a step in the right direction, for I am of the opinion that a paper or journal of any kind that will advertise for as bold a thief as C. B. Cline is almost as guilty of robbing his fellow-men as the man who does the stealing, for we expect to gain knowledge by reading the papers, and not be robbed ; and if you feel like it, give them "fits" for helping such a man steal from his fellow-men.

Black Lick, O., Nov. 17. D. N. RITCHEY.

SHAKING OFF A BAD HABIT.

Mr. Root:—Perhaps you will remember my writing you a year ago that, if I took GLEANINGS another year, I thought I should give up smoking. I smoked constantly—had a pipe or cigar in my mouth nearly all the time, and even went to bed smoking. I stopped over eight months ago, and have had no desire for it since. It was reading GLEANINGS that first put it in my mind to stop. I have felt better since than I ever did before. I thought it might please you to think I had stopped although I have never met you. I have read GLEANINGS for a number of years.

Patterson, N. Y., Dec. 10. J. S. LUDINGTON.

[Friend L., your testimony comes very opportunely for the first number of the year ; and it not only pleases me, but it will please more than one reader of GLEANINGS, if I mistake not; and I should not be at all surprised if it induced somebody else to follow your example. The tobacco habit must be overcome largely by personal work.]

For Sale—A LOT OF FINE HIVES OF BEES,

with good queens, in 8-frame hives or shipping-cases. Price each, $3.50.

JOHN A. THORNTON, Lima, Ill.

In writing, mention Gleanings.

CASH FOR BEESWAX.

We pay 25c per lb. cash, or 27c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 30c for *best selected wax. Old combs will not be accepted under any consideration.*

Unless you put your name *on the box*, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by *express*.

THE A. I. ROOT COMPANY,

WINTER APPLES by the bbl., of 3 bu. each, or by the carload, at $2.50 per bbl.

J. B. MURRAY. Ada, Ohio.

FOR SALE. Cheap for cash, a Barnes sawing-machine, practically good as new; cost $50; can put in 10-inch saw. D. V. MCMANUS.

Forestville, Chautauqua Co , N. Y.

In writing, mention Gleanings.

BARRED PLYMOUTH ROCKS, Hawkins' noted strains. A few choice birds for sale cheap, $1.00 each. FRED H. BURDETT, Clifton, N. Y.

In writing, mention Gleanings.

OLENTANGY INCUBATOR. This Machine will hatch every fertile egg, so thousands testify. It is the best **Self-Regulating** machine made. **Brooders $5.00.** Catalogue free.

Address, GEO. S. SINGER, Cardington, O.

In writing advertisers, mention GLEANINGS.

Wants and Exchange Department.

WANTED.—To exchange 140 colonies of bees, with all fixtures belonging to a first-class apiary, for good horses and mules.

ANTHONY OPP, Helena, Ark.

WHAT will you offer for one b-flat cornet and case, also one e-flat alto, good instruments, practically new? Address Box 321, Clifton, New York.

WANTED.—To exchange pair of St. Hubert man-trailing blood-hounds, butcher tools, foundation-mill, and bone-mill, for bee-hives in flat or Italian bees.

ELIAS FOX, Hillsboro, Wis.

WANTED.—To exchange a magic lantern, practically new, cost $45; 80 choice views, cost $40, for extracted honey, shipping-cases, sections, extractor, or incubator. E. E. SLINGERLAND, Troy, Pa.

WANTED.—To exchange 1 roller organ, 12 metallic rolls (used but little), 1 fox hound (2 years old), for miners' magnetic compass, dip-needle, or offers.

N. A. BLAKE, Beebe Plain, Vt.

WANTED.—Situation in an apiary, for the coming year, either salary or share. Address

H., Box 58, Willow Springs, Mo.

WANTED.—Second-hand machinery for manufacturing cheese-box heading ; also cheese-box-nailing machine. Must be in good repair, and cheap for cash. Address

C. & H., Box 117, Spring Green, Sauk Co., Wis.

WANTED.—To exchange, one A. I. Root's make, of one-piece section machine, in good condition, for honey or offers. WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—To exchange pure Plymouth Rock chickens and eggs, farm and garden seeds, Mayberry, Loganberry, new and old varieties raspberry-plants, talking-machine, etc., for offers.

Sunnyside Farm, Baltic, Tus. Co., O.

WANTED.—To exchange, an E-b cornet, for a honey, extractor, or offers. G. J. STURM, Flora, Ill.

WANTED.—To exchange rifles and foundation-mills for incubator. W. S. AMMON, Reading, Pa.

WANTED.—Work, by an experienced apiarist, by month, or apiary on shares.

J. B. HENDERSON, Roney's Point, W. Va.

OUR TREES etc. **advertise themselves. The best always cheapest.** Can supply all your wants from **Flower and Vegetable Seeds to Street Trees** at low rates. We publish one of the **leading Seed, Plant and Tree Catalogues issued** which we mail **free.** Try us, our stock and prices will please you. Can refer you to customers in every state and territory in the Union. 43 years of square dealing has made us patrons and friends far and near. Have hundreds of car-loads of

FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS, ETC.

We send by mail postpaid Seeds. Plants, Bulbs, Roses, Small Trees, etc., safe arrival and satisfaction guaranteed, larger by express or freight. 44th year. 32 greenhouses. 1000 acres.

THE STORRS & HARRISON CO., Box 65, - - PAINESVILLE, O.

When writing to advertisers please mention GLEANINGS.

BURPEE'S FARM ANNUAL FOR 1898

The Leading American Seed Catalogue.

The best seeds that grow, at lowest prices.
Twenty-one Grand, New Novelties for 1898, which cannot be had elsewhere.
This handsome new book of 144 pages is **mailed free** to planters everywhere.
WRITE TO-DAY. W. ATLEE BURPEE & CO., PHILADELPHIA.

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POULTRY-RAISERS AND ALL, $6.00 FOR $2.50

Christian Herald, printed in colors, largest and best religious weekly in the world	$1.50
American Agriculturist, best 28-page illustrated farm and market weekly	1.00
Am. Agriculturist Year-book and Almanac, over 600 pages, worth	1 00
New York Weekly Tribune. best 20-page newspaper in the United States	1.00
Poultry Keeper, 20 pages, printed in colors. It leads, others follow	.50
P. K. illustrator, No. 1, 100 illustrations, poultry-houses, incubators, brooders, etc	.25
P. K. illustrator, No. 2, 75 illustrations, artificial incubation, care of chicks, etc	.25
P. K. illustrator, No. 3, poultry diseases, gapes, roup, cholera, moulting, etc	.25
P. K. illustrator, No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $2.50 we will send these 4 great papers 1 year, and the five books, grand total	$6.00

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

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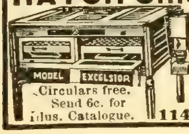
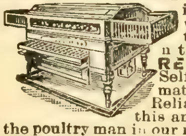


HATCH Chickens BY STEAM—With the MODEL EXCELSIOR Incubator

Simple, Perfect, Self-Regulating. Thousands in successful operation. **Lowest priced first-class Hatcher made.**
GEO. H. STAHL.
114 to 122 S. 6th St, Quincy, Ill.

Circulars free. Send 6c. for Illus. Catalogue.



NEVER BEATEN in all the many shows in which it has participated, there must be something in the superiority claims of the **RELIABLE INCUBATOR** Self regulating, entirely automatic, you put in the eggs, the Reliable does the rest. All about this and many things of value to the poultry man in our new book. Send 10 cts. for it.
RELIABLE INCUBATOR & BROODER CO., QUINCY, ILLS

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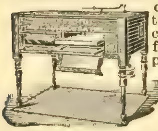

THE SUCCESSFUL INCUBATOR

is the standard machine for hatching strong, healthy chicks. Self-regulating. patent turning trays, drying room for chicks, non-explosive lamp—just a few of its good points. Sold under positive guarantee to work perfectly. Beautifully made and durable. Our 128 page catalogue describes them fully; tells many things about poultry raising you should know. Mailed for 6 cts.
DES MOINES INC. CO. Box 503 **DES MOINES, IA.**

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START IN BUSINESS!

HATCH THOUSANDS WITH THE PRAIRIE STATE INCUBATOR
200 FIRST PREMIUMS.
Send for Catalogue.
PRAIRIE STATE INC. CO., Homer City, Pa.

In writing advertisers mention GLEANINGS.

We PAY CASH each WEEK the year round, if you sell Stark Trees. Outfit free.
STARK NURSERY, LOUISIANA, MO., Stark, Mo., Rockport, Ill., Dansville, N. Y

PATENTS PROCURED PROMPTLY

AT REASONABLE RATES

By **J. A. OSBORNE & CO.,**
PATENT LAWYERS,
579 The Arcade, CLEVELAND, O.
CALL OR WRITE. ADVICE FREE.

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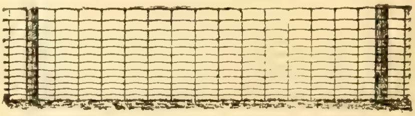

Queer Economy (?)

it is, to board a whole fence weaving gang for a week, when the hired man and Page agent would put up the same amount of **better fence** in a day.
PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

In writing advertisers mention GLEANINGS.

BOWEN
CABLE STAY FENCE CO

$10 For a machine to build the cheapest strongest and best fence made of wire. No royalties. no farm rights, machine easily and quickly operated by any farmer.
Send for large circulars

16 to 24 cts. Per Rod.

Strongest Combination

NORWALK, O.

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Honey Column.

CITY MARKETS.

Detroit.—Fancy white comb honey, 13; A No. 1 white, 11@12; fancy dark, 9@10; No. 1 dark, 8@9; white extracted, 5@6; dark, 4@5. Beeswax in good demand at 25@27.
Jan. 6. M. H. Hunt, Bell Branch, Mich.

New York.—There is no material change in our market. Off grades of white and buckwheat are moving off slowly, with plenty of stock on the market. A fancy white would find ready sale at quotation. We quote: Fancy white, glassed or in paper boxes, 11@12; ditto, unglassed, 10@11; off grades, 9@10; buckwheat, 6½@7. Extracted is selling fairly well. The demand for extracted buckwheat is increasing, and we would advise bee-keepers to send it along now. Beeswax is steady at from 26@28 cts.
Hildreth Bros. & Segelken,
Jan. 8. 120-122 W. Broadway, New York.

Cleveland.—We quote selling as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6. Beeswax, 28.
A. B. Williams & Co.,
Jan. 7. 80-82 Broadway, Cleveland, Ohio.

Chicago.—The best grades of white comb honey are selling at 11 cents; No. 1 grade at 10; light amber, 7@9; dark, 7@8; white extracted, 5@6; amber extracted, 4@5; dark amber, 4, depending on flavor, quality, and package, whether it sells at highest or lowest quotation. The volume of transactions is small, offerings are liberal. Beeswax, 26@27 cents for the ordinary apiary run.
R. A. Burnett & Co.,
Jan. 7. 163 South Water St., Chicago, Ill.

Kansas City.—The receipts of comb honey are large; demand only fair. Extracted, light demand. We quote fancy white, 1-lb. comb, 10@11; No. 1 white, 1-lb. comb, 10; amber comb, 9@9½; dark, 8½@9; extracted white, 5½@6; amber, 5@5½; dark, 4@4½. Beeswax, 20@22. C. C. Clemons & Co.
Jan. 8. Kansas City, Mo.

Columbus.—Fancy white clover, 13; No. 1 white clover, 11@12; No. 2 white clover, 10; fancy amber, 8@8½. No. 1 amber, 7½.
The Columbus Commission & Storage Co.,
Jan. 10. 409–413 N. High St., Columbus, O.

New York.—Our market is rather quiet on comb honey, though fancy white would find a ready sale at full prices. We have a good stock of fair and mixed honey, and in making sales have to shade quotations some. Extracted honey is selling very well. Fancy white clover and basswood would find ready sale. We quote white comb fancy, 11½@12½; fair grades, 9@10; buckwheat and mixed, 6½@7; extracted California white, 5@5½; amber, 4½@4¾; white clover and basswood, 5¼@5½; buckwheat, 4@4½; southern, 50@55 cts. per gallon, in demand. Beeswax, 26@27; finds ready sale. Francis H. Leggett & Co.
Jan. 7. New York.

Albany.—Comb honey is selling very slowly, and we are surprised to find so much still in the hands of producers. We quote fancy white 12@13; A No. 1, 11@12; No. 2, 9@10; No. 3, 8@9; No. 1 dark, 7½@8; No. 2, 7@7½. Extracted, light, 5@6; dark, 4½.
Chas. McCulloch & Co.,
Jan. 8. Albany, N. Y.

Denver.—Our honey market remains about the same. The demand for comb honey is quite large owing to the price being lower than ever before. There is a good steady demand for our extracted. We can quote No. 1 white comb at 10; No. 1 white extracted, 6.
R. K. & J. C. Frisbee,
Jan. 10. Lockbox 1014, Denver, Col.

Minneapolis.—Our market is pretty well supplied with comb honey, all grades, mostly California stock. Best white clover is selling here now at 11c. Doubt if there will be any advance for some time yet. Extracted is in better demand, selling from 5½@6 for fancy white. But little demand for poorer grades of extracted. S. H. Hall & Co.,
Jan. 11. Minneapolis, Minn.

Boston.—Fancy white in cartons, 12@13; A No. 1 white, 12; No. 1 white, 10@11; No. 2 white, 8@9—no demand. Fancy light amber, 10; A No. 1 amber, 9; No. 1 amber, 8. No. 3 honey will not sell here. White extracted, 6@6½; light amber extracted, 5@5½. Beeswax, if pure, would bring 24@28; very little here, with good demand. Honey is selling slowly, with a full supply on hand of all but fancy white in cartons.
Blake, Scott & Lee,
Jan. 8. Boston, Mass.

Cincinnati.—There is no change in the market; demand is slow for all kinds of honey. We quote 10@13 as the jobbing prices for best white comb honey. Cincinnati is no market for dark comb honey. We quote 3½@6c as the range of prices for extracted honey, according to quality. Demand is fair for beeswax at 20@25 for good to choice yellow, on arrival.
Chas. F. Muth & Son,
Jan. 8. Cincinnati, O.

Milwaukee.—The condition of this market for honey is not much changed from our last report. The stock of comb honey is somewhat increased, and sales somewhat restricted, and the demand has been more for the extracted. We think one cause of this is that consumers are having more confidence regarding *purity*, as we have always stood for *pure food;* and now the law of this State is on our side, we are hoping for improved conditions. We now quote 1-lb. sections, fancy, 11@12; 1-lb. sections, A No. 1, 10@11; 1-lb. sections, No. 1, 9@10; 1-lb. sections, No. 2, 5@8; 1-lb. sections, dark, No. 1, 8@9; extracted in bbls. and kegs, white, 5½@6; extracted in bbls. and kegs, dark, 4½@5. Beeswax, 25@28. A. V. Bishop & Co.,
Jan. 8. Milwaukee, Wis.

St. Louis.—Honey is moving very slowly. Either the want of money or something else makes the demand very light, and the stocks are pretty large. Quotations are without change.
Wescott Com. Co.
Jan. 10. St. Louis, Mo.

Buffalo.—Fancy, 11@12; A No. 1, 10@11; No. 1, 9½@10; No. 2, 8@9; No. 3, 5@7. Honey is selling very slowly. Beeswax is in good demand at 25@28c.
W. C. Townsend.
Jan. 10. Buffalo, N. Y.

For Sale.—Extracted clover at 6 cents.
M. Isbell, Norwich, N. Y.

For Sale.—Finest quality white-clover extracted honey, 6½ cts. a pound; heartsease honey, 4½ cts.; both kinds in 60-lb. cans, one in a case. Sample 10 cts.
R. & E. C. Porter, Lewistown, Ill.

For Sale.—Buckwheat comb honey, at 7 and 8c per lb. Extracted at 4c in 160-lb. kegs, f. o. b. cars.
N. L. Stevens, Venice, Cayuga Co. N. Y.

For Sale.—Cheap, 25 bbls of honey.
Chas. Dadant & Son, Hamilton, Ill.

The Bee-keepers' Review

For January is really an old-time, special-topic issue on the no-bee-way, or plain section, and the "fence" separator. It gives the views of such men as Crane, Heddon, and Bingham. Mr. Aspinwall writes at length upon foundation, and particularly in regard to the new, no-wall style, and there is a fine picture of a super of partly filled sections in which the comb was built from this kind of foundation. The frontispiece is from a photograph of eight filled sections, four of which are of the old-style, and the others of the plain variety. It is an object-lesson that all can understand and appreciate.

Better send $1.00 for the REVIEW for 1898 and receive the December number free, or, if you prefer to see samples before sending your dollar, send ten cents for the December and January numbers; and if you then decide to subscribe, the ten cents that you have paid may apply on the subscription.

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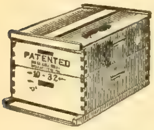

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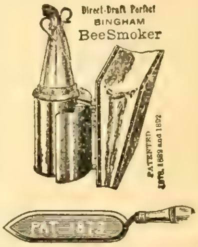
January 27, 1897. ruly, W. H. EAGERTY, Cuba, Kansas.



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Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. JAN. 15, 1898. NO. 2.

STRAY STRAWS

FROM DR. C. C. MILLER.

THE SUN WAX-EXTRACTOR, says W. Fitzky, in *Centralblatt*, was invented by G. Leandri, who exhibited it in 1881, and it was afterward notably improved by Dr. Dubini.

WITH A BUILDING that is separate, and specially arranged for it, the Trans-Mississippi Exposition honey show will easily eclipse that of the World's Fair. Then it's something to have the right man at the head of it.

HOW MANY COLONIES can be kept in one apiary with only white clover? is asked in *Australian Bee Bulletin*. No light is given, except that some have no white clover, and with others it's a very uncertain honey-plant.

THAT PLAN for prevention of swarming, given by Doolittle, p. 16, is well worth trying. But for those who expect to be on hand to see swarms, as does his querist, I know a better plan, and one which I practiced with a great deal of satisfaction. It's the "Doolittle plan." Make him tell it.

STAPLES FOR spacers seem to be so much used in France that they are listed in the extensive catalog of R. Gariel. [And yet you do not like staples, doctor. Suppose you try them again this coming summer. They will not punch into the wood like a nail-head, neither are they so naughty about catching in the wire cloth, or in hitching and catching in getting the frames past each other into position in the hive.—ED.]

YOU WANT ME, Mr. Editor, to point out the culprit guilty of saying "new beginner." Of course, you want me to give you page and line where it will be found in GLEANINGS. Well, you can breathe easier. I don't know that GLEANINGS is guilty. It's the other fellows. [We draw an easy breath, doctor. The term "new beginner" is such a natural, easy one, that we find ourselves obliged to be on the watch for it continually. But say, doctor, why don't you hit the other fellows direct?—ED.]

THE *Australian Bee Bulletin* mentions what it calls an excellent suggestion by a correspondent, "that the government, while leasing land for wool-raising, also lease the same land for bee-farming—one not to interfere with the other—the government giving the squatters the grass, the bee-keeper the tops of the trees, and a radius to which he would be protected from other bee-farmers." Some fellow who didn't know any too much once urged something a little in that line on this side the globe.

STATISTICS FOR FRANCE for 1895 have just been published in *L'Apiculteur*. Total colonies, 1,615,061. Total honey, 17,621,672 lbs.—about 11 pounds per colony. Total wax, 4,867,219 lbs.—about 3 lbs. per colony. Average price of honey, 12½ cts. a pound; of wax, 20 cts. a pound. [Honey statistics for France may be reasonably correct; but the statistics that have been offered by our own government, detailing the extent and importance of the bee-keeping industry, were wide of the mark.—ED.]

NOW JUST SEE, Ernest, what a mess you've made of it, by meddling in that joke I had on your father, p. 6. I said the *Golden Rule* was behind the times, and he ought to read *Christian Endeavor World*, and then you go to talking about other papers, when the joke was that there was no such paper as the *Golden Rule*, the name having been changed to *Christian Endeavor World*. Of course, that slipped his mind. [I wanted to say what I have desired to say for a long time; and it seemed opportune to bring it in right then and there, even if it did make a mess of your joke.—ED.]

A CASE is minutely related in *Australian Bee Bulletin*, in which a virgin queen stung a worker to death. I was once eye-witness to a similar case, and my reputation for veracity suffered because I didn't keep it to myself. L. B. Smith, in *Southland Queen*, says he saw a virgin queen sting to death three workers in rapid succession. [After your veracity was questioned at the time, reports came in very shortly, verifying your statement. Facts are facts, and we can't get around them, even if they do seem improbable.—ED.]

A CORRESPONDENT stumbles at that statement, p. 777, that queens not fertilized this fall will stand a good chance to be mated next spring. What do we know definitely about the matter, anyhow? Is there any clear proof that a queen reared in the fall will be fertilized in the spring? [I might as well be frank, and confess that my statement on page 777 is stronger than I meant it to be. I meant to say there was a chance of late-reared queens being fertilized in the spring. I based part of my authority on the fact that Doolittle said so, and that our own experience has seemed to indicate it pretty strongly.—Ed.]

No, decidedly, positively, and emphatically, an entrance ⅞ deep, and the whole width of the hive, is not enough to satisfy me. A chance for a current clear through is needed. For comb honey, ⅞ front, back and sides, is none too much; for extracted, ⅞ at front and ½ at top of back end. [I almost believe you are right, doctor, although I do not want to believe it. But what would be the harm of having an entrance at both ends, ⅞ inch deep? If you are right, beyond a question, then we supply-dealers had better make our hives so there will be an entrance at both ends of the bottom-board. Now, who will be the smart inventor to get up something to close up the rear entrance neatly and quickly?—Ed.]

Quite generally it is supposed that late feeding induces late laying. G. de Layens says this is a mistake, according to some cases he has noted, the intensity of the laying fading out toward the close of the season, not to be rekindled again even by a late natural honey-flow. Possibly this point needs fresh investigation. [My own experience in feeding would lead me to think that G. de Layens was probably right. Some years ago we practiced stimulative feeding late to get brood-rearing started for the purpose of getting bees in colonies that were made up almost entirely of old bees. But such colonies would not commence brood-rearing, nevertheless. They simply stored the feed, capped it over, and made preparation generally for winter.—Ed.]

Joseph Langer, according to *Centralblatt*, has been investigating the poison of the honey-bee, and finds its poison proper not formic acid, as heretofore supposed, but an organic base whose exact composition is not yet known. The sting of a bee was kept for six weeks at the temperature of boiling water, and then applied to the eye of a dog. The phenomena produced were identical with those of the fresh poison. Those who were skeptical as to my statement a few years ago, that the sting from a bee that died in the fall was effective in mid-winter, may gag a little at that last statement. [I am glad that somebody has taken up this question. We know too little about the poison from bee-stings, and I hope Herr Langer will pursue his investigations further.—Ed.]

Isn't that advice, p. 17, to extract and level unfinished sections, rather dangerous? If granulation has not already commenced, it surely will commence in the honey left after extracting, and that will spoil any honey the bees may store in the sections. Better sell those sections cheap, or else melt 'em up. [I implied in that advice, on page 17, or meant to, at least, that, after the honey was extracted, the bees should be allowed to have access to the combs, and clean them out, after which they may be leveled down. I do not believe it is good policy generally to put second and third rate honey on the market, even if we do sell it cheap. Better extract it. I know that is the policy of most of the York Staters, and I have come to believe that they generally do things about right.—Ed.]

Veneers in shipping-cases are talked about as a necessity with no-bee-way sections. Now, really, are they a necessity? I've been shoving some Danzy sections around on a table, and I can't see any chance of spoiling them so long as they keep on the table. The only danger I see is when you slide the last row in the case; but a single veneer would do as well for that as more; and, with care, would even one be needed? [Perhaps you could get along without veneers, doctor; but all producers may not have their honey as solidly fastened to their sections as you do; and, moreover, freight-handlers may some day dump *your* honey, and make you wish that veneers had been stuck in between the rows of your cased honey. The best way to convince you, doctor, is to go into the business of buying and selling honey; then you'd say, "Producers can not take too much caution."—Ed.]

I've just been eating the most delicious honey caramels I ever tasted. The secret is in having them a trifle underdone. Too much cooking hurts the delicate honey flavor. [You did not say, doctor, that the honey caramels you were telling about were made after your recipe, in the honey-leaflet written by yourself. We have had a good many reports from those who have tried your honey-caramel recipe, and they all say "it works to perfection." By the way, I am not sure but some enterprising baker or candy-maker might develop quite a business in making and selling honey caramels. If some one will do it we will give him a two-inch advertisement three insertions free. Now, here is a chance for some enterprising man or woman to make a little money. I should like to have people know that honey caramels are the nicest caramels in the world. —Ed.]

When swarms cluster on a high limb, and you want to shake down the cluster, the *Australian Bee Bulletin* says, tie a stone on the end of a rope, throw the stone over the limb, then shake. Is that meant as a blow to bee-keeping by women? [Throwing a stone over a high limb with a cord attached to it is quite an idea. I know it will work with almost any man or boy. In hiving swarms into a hiving-basket, I have sometimes found it necessary to keep the limb, upon which the bees have previously clustered, on a continual joggle, because bees are almost determined to go back to the original limb. Sometimes, in dislodging the swarm from a high position into a basket, and then carrying it down laboriously from the tree, quite a lot of bees will still go back to the old limb. Well, now, if a rope were attached so that some one could jerk continuously, these same bees would go where the rest of the swarm was—into the hiving-basket. Say, doctor, what makes you keep throwing stones at the poor women? You might find that some of them can throw straight enough to hit you, if you do not look a "leedle oud."—ED.]

GENERAL CORRESPONDENCE

DO BEES PAY?

Some Interesting Figures; $5.00 Per Day for Time Spent among Bees.

BY DR. C. C. MILLER.

I have made an honest effort, Mr. Editor, to comply with your request to make a guess at the amount of work involved in getting this year's crop of honey. It can only be a guess at best; but in looking up the meager memoranda I had to base even a guess upon, it occurred to me you might be interested therein.

Taking the year as you have suggested, from the time of putting bees in winter quarters last fall to this fall's cellaring, I find the bees were carried into the cellar Nov. 16 and 17, 1896, the weather being so warm that we could carry only morning and evening. Four of us carried; but I'll reduce the work in each case, for easy calculation, to the work of one hand, and call it three days' work to cellar the bees; 260 colonies were cellared, 10 being packed on summer stands, 8 of which lived through. Circumstances were most favorable for getting bees in winter quarters in best condition. Nov. 13 the thermometer stood 13° above zero. Nov. 15 it was 60°, and the bees had a fine fly. Then the right thing was to hustle them in before they endured another cold spell to make them fill themselves.

The winter was mild, and no fire was in the cellar till Jan. 27, when it was kept up for 4 days, the only fire of the winter. March 6, dead bees swept out for the first (ought to have been sooner). Perhaps 1½ bushels dead bees were swept out. March 29 it was again swept, yielding perhaps a bushel of dead bees. Aside from this the bees had little attention through the winter, the doors being opened when mild enough, and an occasional excursion made into the cellar to see if it smelled sweet. All together, two days' time would probably cover the winter care.

About the middle of March, T tins and supers were cleaned, making perhaps six days' work. March 20 we began the work of putting foundation in sections, top and bottom starters, and putting sections in supers. This took perhaps 27 days' work, being finished April 21. Two days' work got the bees out April 7, after an imprisonment of 141 days. Eight days' work may be charged for getting the bees to the two out-apiaries, and doing some little work there. In this I count the work of the team as one man, and you will notice I make no mention as to whether any outside help was called in or not, just lumping all together, and then giving the sum total, just as if the whole had been done by one man.

After the shop work was done, April 21, about ten days would cover the work in the apiaries till May 1.

Then the fun began. It was a mixed season—sometimes discouraging, sometimes encouraging beyond precedent. Some memoranda from my record-book may not be amiss.

May 5. Bees working hard on dandelion and hard maple.

May 9. Apples in bloom.

May 24. Saw a white-clover blossom.

May 26. Have 239 colonies to begin season (I had decided to unite down to 240, but got it one less than that).

May 31. Too cool for several days for bees to do any thing.

June 9. Been cold for days—some colonies at point of starvation. Clover very abundant. To-day warm, and fresh honey shakes out of combs.

June 14. Hot. Some supers nearly filled.

June 16. Honey coming in such a flood that some supers are about full, and two additional supers were given to most colonies.

June 17. Mercury 90°; keeps us on the jump to keep up with the work.

June 18. Blocked up the hives ¾-inch to an inch. (Might have been done sooner.)

June 22. Much cool weather.

June 24. First sweet-clover bloom.

June 26. Took off first finished super.

July 2. Have 316 supers on the hives at Wilson's. (That lacked only 12 supers of averaging 4 supers to the colony. And I may as well say here, that, before the season was over, I was pretty badly scared. Having 48 to 120 sections on a hive, pretty well filled with honey, and not a section sealed, and the bees threatening to stop work, was enough to send the cold chills down one's back. As things finally turned out it was all right, but it was running a big risk.)

July 5. Lindens out. (So few they don't count much.)

July 8. Mercury 100°. Grand flow.

July 12. Cool and rainy.

July 13. Had terrible day at Hastings. Cold, and bees furious. Have 113 finished supers now in house. Philo empties supers as fast as we take them home; fills supers with "go-backs" (unfinished sections), which we return to hives.

July 14. Robbers trouble.

July 26. Been very dry at Hastings and home, but bees still work at Wilson's. Fine rain last night.

July 29. Bees take fresh hold, and work hard at Hastings.

Aug. 3. Have 10,008 finished sections in house.

Aug. 9. Bees take fresh hold at home.

Aug. 10. Took off 65 finished supers at Wilson's.

Aug. 11. Heavy work at Hastings. Have 13,200 finished sections in house.

Sept. 4. Took off all supers.

Sept. 20. Commenced scraping sections, and packing, ready for shipment Oct. 5.

It's a very hard thing to make any kind of estimate as to the amount of time put in from May 1 to Oct. 5. We worked on the eight-hour system—eight hours in the forenoon and eight hours in the afternoon ; but I had a good deal of writing to get in. Sometimes I'd be up at 3 o'clock, and not get to work in the apiary till 9 or 11 o'clock. Then there were some breaks—a week at the Buffalo convention, and some time for Sunday-school conventions. (You're mistaken, Mr. Editor, in thinking I spend some time tending posies, and mowing "weeds and things." I had to give all that up, but am blessed with a brother-in-law who has taken the job off my hands, and the only hard farm work I did through the summer was to eat the big strawberries after they were on the table.) After some thinking, estimating, and guessing, I've settled upon 220 days' work as possibly about the right thing for that five months or more.

For the rest of the time till the bees were home (Oct. 18) ready to be put in the cellar, 15 days may not be out of the way.

Adding up the different items, it makes a sum total of 293 days of ten hours each for the year's work. Dividing it between two of us, it makes 146½ days, or a little more than 24 weeks—not quite half the year. I confess that's not as much time as I should have guessed at a lump, but I've tried to guess as fairly as I could at the different items. You're welcome to add or subtract, as you like.

Marengo, Ill., Dec. 10.

[There, now, doctor, I'm satisfied you've given us just the information we wanted. Let's see what the figures mean. In those 293 days for one person, 17,150 lbs. of comb honey was produced and marketed. This would make a credit of 58½ lbs. of comb honey for each day's work for one person. Putting this honey at wholesale at 10 cts. would make each day's wages amount to $5.85. From this I take 85 cents as covering the cost of sections foundation, shipping-cases, interest, etc., making $5.00. The rate per day would be the same whether two people were employed 146½ days or whether one person worked 293 days. Considering that one of the persons was your sister, and that you yourself the other one, are not as strong as the average of men, the rate $5.00 per day for each of you is not bad.

Perhaps, doctor, you don't care to have your private income lugged before the public in this fashion, especially when some other fellow makes the figures. But if those I have made are not far from right, they go to show what *can* be done in a good year by a good bee-keeper

Say, doctor, we shall read your articles more closely than ever from now on, to see if we can do as well, some of us. While I believe you sold your honey for more than 10 cts., I suppose it is but fair and right that we say you can't average such a yield from year to year, or at least haven't done it, owing to poor seasons.

But, say ; I can't help feeling that raising those hives up ¾ inch off the bottom is very important. Can you tell us how much honey this saved for you, or how many swarms it prevented?—ED.]

TWENTY-SEVEN YEARS' EXPERIENCE.

Some Curious Notions of "Old-Timers" at Bees.

BY A. E. MANUM.

Not long since the question was asked by a correspondent of GLEANINGS, "Is it safe for a man with a family to depend upon bee-keeping alone for the support of his family?" Now, Mr. Editor, I feel like answering this inquirer by giving your readers a synopsis of my experience as an apiarist, which dates back nearly 27 years, and at the conclusion of my story the questioner may draw his own conclusions as to whether bee-keeping *alone* is a safe occupation to rely upon.

In March, 1871, a neighbor offered to loan me Quinby's "Mysteries of Bee-keeping." I told him I was afraid of bees, and would not have a colony on my premises. But he insisted that I was just the man for the business, inasmuch as I was greatly interested in fruits and gardening, and really urged me to take the book home and read it. To please him I carried the book home, but did not intend to read it. I was then engaged in the harness business, employing four to five men the year round, and was satisfied with each year's "round-up." But one evening I took up the book and looked over the pictures, and happened to cast my eyes upon large figures which pointed out the great profits derived from one colony of bees. Well, I thought I would read about it, so I commenced at the beginning, carefully reading page after page, and truly it was past eleven o'clock when I retired that night ; and, do you believe, Mr. Editor, the very next day I bought two colonies of bees? It came about in this way :

A farmer came into my shop to buy a harness, and wanted to pay a portion of the price of the harness in barter, such as wood, potatoes, apples, etc. This man, I knew, had bees, and this was my chance. I sold him a harness and took two colonies of bees, at $5.00 each, for the barter part of the harness trade. I could not wait for warm weather before moving home the bees, so I moved them at once. Knowing they were in old box hives, and on their summer stands, I wanted to get them into my cellar, where I could visit them often, and that I did nearly every evening, tapping on the hives to hear them hum.

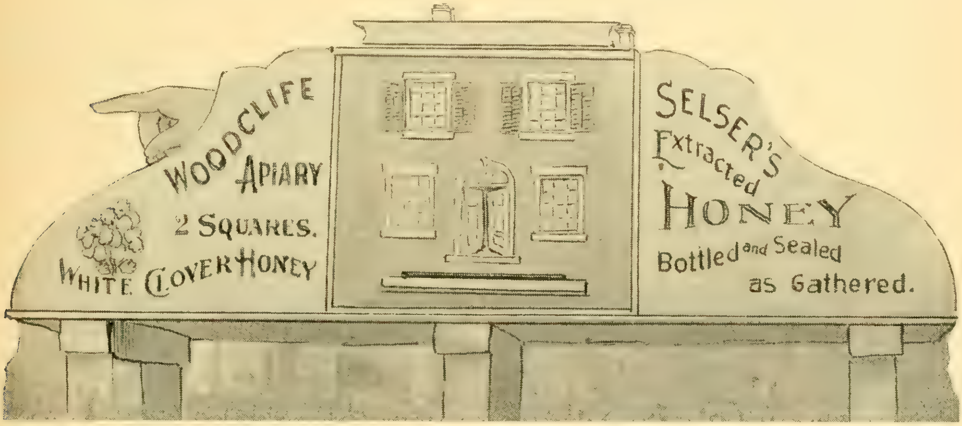
I am amused now when my thoughts revert to those days when I was so *wise*. Oh! I knew *all* about bees. Yes, Mr. Editor, I had the "Mysteries of Bee-keeping" at my tongue's end ; and the way I lectured to those old bee-keepers of "forty years' experience" was not "slow," I assure you.

How many of these old-time bee-keepers would say to me, "Why, young man, I have kept bees for *forty years*, and I never saw a queen, and now you tell me that the queen" (some would say king-bee) "does not rule the swarm, and that she lays all the eggs"!

Another would say, "Young man, you can't make me believe that wax is a natural product of bees, and that it comes from their bodies, for I have seen them carry it on their legs."

I remember one said, "My father kept bees as long ago as I can remember, and I have kept them for thirty years, and I never heard before that they live only ten weeks. Why! I now have a swarm that grandfather gave my father fifty years ago, and they are alive yet, and it is the best swarm I have got. They have swarmed every year except one, and that was the year father died. That year they neither swarmed, nor made any honey; therefore your theory that bees don't know when there is a death in the family is all bosh. Why! the summer that father died, our bees all died except this one swarm, and I suppose they too would have died, only that they were once grandfather's."

I was obliged to listen to such talk by a few old-time bee-men. Not all were as wise. Very many seemed interested in my talk, and in the course of two or three years were induced to adopt improved hives and new methods. But, oh how wise *I* was! Surely, Mr. Editor, I knew four times more about bees then than I do now, viewing the past from my present standpoint.



In April my two swarms were set out under an apple-tree in my garden; and many a day, after dinner, I would go out and watch the bees until the afternoon was well advanced, and I would often find customers waiting for me; but in those days my bees were of more consequence to me than were customers—at least they were uppermost in my mind. In due time they were transferred into movable-frame hives of the American pattern. Were I to tell you, Mr. Editor, of my experience in transferring my first swarm you would laugh yourself hoarse, but I will not take up space to relate that trying experience. In my next I will tell you of my first crop of honey, which netted me in Boston, Mass., 33⅓ cts. per lb.

Continued.

[When an old-timer comes around talking about the "king bee," and how wax is carried on the legs, and not secreted from the wax rings, or pockets, it is almost impossible for me, at least, to give him a respectful hearing, much less answer.—Ed.]

THE BEE-SPACE.

Is the Box-hive Better for the Farmer? Closed-end Frames for Wintering.

BY F. GREINER.

It is now forty-five years since father Langstroth in America and Baron von Berlepsch in Germany, unbeknown to each other, invented and gave to the world the hanging frame with the bee-space around its different parts. This bee-space is rather the most important part of the invention; no other has so revolutionized bee-keeping as that. By it we have gained control of our bees in a measure not dreamed of before. It is true, the well-known and still living Dr. Dzierzon invented his bar-hive seventeen years prior; but, although Dzierzon accomplished with his bar hive wonderful things, the bee-keeper of the present day can hardly afford to use it. When the reader imagines that each and every comb will have to be cut loose on both ends before it can be moved, I am sure he will not want to try it. Even in the hands of many of the more experienced, many combs would break down, especially the heavy and newer ones. And, after all, Dr. Dzierzon clings to that bar hive of sixty-two years ago with great tenacity; and while he tolerates and uses the swinging or hanging frame in the supers for extracting, he has condemned it again and again for use in the brood-chamber. He holds that it is not conducive to the welfare of the bees, and especially detrimental during our long severe winters.

In a recent issue of the *A. B. J.* I notice this same idea expressed by C. E. Mead. He goes so far as to call the bee-space "the detestable bee-space."

Now, I want to object very seriously to such nomenclature. To say the least, it is next to an insult to Rev. Mr. Langstroth. I will not deny that the bee-space between and around the brood-frames is in a large measure to blame for our losing thousands of colonies of bees—at least, I had long been convinced of this when, a few years ago, I recommended (though timidly) in an agricultural paper a hive without frames for farmers and others who do not want to handle them, or would not if they had them. I thought to myself, "What is the use of encumbering a hive with frames when they are not needed?" for they certainly are no advantage to the bees. I believe they worked havoc with many of my neighbors' bees.

When I first commenced keeping bees there was hardly a farmer here but had some bees; all styles of boxes were in vogue—soap-boxes, barrels, and nail-kegs included—and bees were kept rather successfully as to wintering, as well as to raising honey. Not so, however, after I sold them new-fangled hives and transferred the bees. One after another of the old bee-keepers dropped out of the ranks, the hives were worked up into kindling (very excellent kindling indeed, though high-priced). Now no bees are left to tell the story, and I am practically sole possessor of the field. When I think of this I feel guilty; but I certainly did the black deed in good faith. And, too, it may be all right as it is. There are bees enough, and the number of honey-producers is probably fully up to the requirements.

On the other hand, the bee-space has been a great help to the bee-industry. I will not take the time to enumerate the advantages, for every one is familiar with them. Where would bee-keeping be to-day had it not been for this bee-space? If we have paid for the lessons learned, I ask, ought we to expect to learn any thing of great value without paying for it?

And now, really, do we winter our bees so badly after all? Wintering in the movable-comb hive, including the detestable bee-spaces, is a science; but I believe we are beginning to understand that science. I believe we have learned to winter our bees even better and surer than the box-hive men of this and past ages. It seems to me that the greater protection we give, alone fully makes up for the disadvantages of the "bee-space." It may be that, sooner or later, a hive will be brought out having the advantages of both the box hive and the movable-comb hive so combined that it will captivate the bee-keepers and become universally adopted as "the hive;" but it is a long way to that time, I think. In the mean time, let us honor the bee-space; and, even should that time have come, we will still honor it for the good it has done. Father Langstroth be praised for it!

Naples, Ont. Co., N. Y.

[I know there is a good following who believe that the bee-space around the end-bars is decidedly detrimental to the bees during winter. They contend, also, that even during summer the brood will not extend out as near the end-bars with a bee-space clear around them as it will to the bars of the closed-end frame. Whether this is true or not, I am not able to say from observation. I only know that good results are secured with open-end frames. Some years ago (I think it was during the winter of 1881), when there was such a great mortality of bees throughout the country, it was said that bees in box hives fared rather better than those in the regular Langstroth. But in late years there seems to be no practical difference. Whether this is due to the fact that modern bee-keepers protect their colonies having open-end frames or not, I can not say.

Believing that there is a demand for closed-end frames, we have for two years been selling the Danzenbaker hive. This, as is well known, has closed-end frames with a bee-space back of them; and this space is closed up by stops that make the space back of the frames practically a dead-air space; and I should think, friend Greiner, that such a hive and frame would just about fill the requirements of a certain class, especially farmers, who can not succeed with the modern open-end-frame style of hive.—ED.]

* * *

TALL VS. SQUARE SECTIONS.

Better Filling and Better Price for the Former; Paraffine Paper a "Delusion and a Snare."

BY B. F. ONDERDONK.

Glad I am you made the footnote to one of my articles on Danzy sections, page 519; viz., "It remains to be seen if these sections may not necessarily be sold at as low a price as the square ones," or words to that effect. The suggestion was timely, as I had been keeping records of each hive, number and styles of sections, with foundation supplied in all known forms, closely packed on top with quilts or paraffine paper, or bee-spaces.

The cleanest and best-filled sections are those under the enameled quilts; very little propolis is applied, and it is easily removed. The quilts will last many years. Paraffine paper I find a "delusion and a snare." Sections with bee-space are thickly varnished. By accident I find that varnished section-holders are entirely free of propolis between the bottoms of sections and the bottom-bars. I used up some old stuff, the refuse of alterations I made in my house, the lumber having been finished in hard oil. All exposed parts were clean, while a holder alongside was thickly daubed. I shall varnish holders and separators.

Now to answer your footnote. At the opening of the season, only a third of my sixteen colonies were provided with supers for Danzy sections. These were provided with 4-inch sheets and ⅜ bottom-starters. The latter I find necessary for well-filled sections. By the end of the white-clover harvest the D. sections predominated. I placed on the hives, during the entire season, 2000 sections—1000 D., 500 slotted, 7 to foot, and 500 4¼ open all the way, bottom and top.

My product in D. sections, white clover,	321	
" " " fall honey,	407	728
Extracted from " less than 12 oz.,	81	
Drawn and partly so, D. sections,	125	
Not worked,	66	272
4¼ sections, white clover,	218	
4¼ sections, fall honey,	250	468
Extracted from 4¼ sections less than 12 oz.,	160	
Drawn, or partly so, 4¼ sections,	209	
Not worked, 4¼ sections,	163	532
Total,		2000

The light sections, between 12 and 14 oz., to be deducted from above full-price sections, are: Danzy sections, 75 at 12 cts.; 4¼ sections, 232 at 10 cts. Nearly half of those produced were light on account of being slotted sections, with closed corners of course. My full sections of 4¼ have sold at 13 cts. for white clover, and 12½ for fall, I furnishing cartons. My D. sections, glazed, white clover, 20 cts.; fall, 16 cts.; no cartons. Glass costs 1⅛ cts. each section. The 4¼, 7 to foot, weighed from 14 to 15½ oz.; the D., 15 to 16½ oz.

The record of my best colony, hived May 7 (a swarm from a colony which produced 82 sections last year), is as follows :

White clover, 24 sections, 7 to foot, slotted, weighing from 15½ to 16 oz., extra well filled, but with a little hole in each lower corner, I hold at 15c,	$ 3 60	
White clover, 73 D., sold at 20,	14 60	
Fall honey, 59 D., sold at 16,	9 44	$27 64

I draw the conclusion from these records, that, were I compelled to sell at the same price as the square, I should still be ahead. You see by the above that my total product is 1211 sections, with 80 lbs. extracted from unfinished sections.

I have found that a large swarm will produce better results in a ten-frame hive on eight frames, with full sheets of foundation, and dummies on each side, than any other way.

Mountain View, N. J., Dec. 1.

[This looks like heavy testimony in favor of the Danzy section; but, hold on! The honey in the tall sections was produced with the cleated separators (or fences), and that in the square ones in the plain solid separators. This would account in part for the better filling, and in part for the better price, but not entirely. It can hardly be questioned that the tall sections, apart from considerations just mentioned, bring a higher price, *other things* being equal, else why should such bee-men as Capt. Hetherington, Doolittle, Morton, Taylor, and hundreds of others, who *began* using them, keep right on with them? They would not do it to be odd, nor for the fun of it, surely. It must be because there is *more money in them.* Now, I am not saying that 4x5 (Danzy), or that 3⅞x5 (Hetherington's), or 3½x5⅜ (Doolittle's), or 3¾x4¾ (Morton's), or 3⅝x5, is just the size, but there seems to be *something* in a taller than broad section.—Ed.]

* * *

THE PETTIT SYSTEM OF PRODUCING COMB HONEY.

Perforated Dividers versus Slatted Dividers.

BY S. T. PETTIT.

Ed. Gleanings :—A number have expressed a desire to know how I succeeded the past season taking comb honey with my new system. I may say that, with me, the system had passed the experimental stage before giving it to the public ; that is, I had for years tested it so fully that there was no reason for doubt about the advantages claimed for it; and the success of the past season was of the most gratifying nature. The crop was large, the finish beautiful, even to the last surface outside all around. I regard the system as away ahead of any thing brought out yet. I have no monetary interest in recommending the system, but I should like those who try it to follow instructions. But believing it profitable to have the dividers offer as little obstruction as possible to the free and easy movements of the bees, and to know just how large holes the bees will respect and not bulge the combs nor build burr-combs in them, I used a large number this year with ⅜-inch holes, each divider having 122 holes; and I am pleased to say that those with ⅜-inch holes gave the most gratifying results every way; and, without a doubt in my mind, the crop was not only better but larger also than it would have been by the old way, because the bees work to better advantage when properly distributed. It stands to reason that they can do more when not crowded together in each other's way, and some waiting for a chance to work, when there is lots to do all around at the outside sections.

THREE-EIGHTHS-INCH HOLES PREFERABLE TO SLATS.

I believe any one who has witnessed the wonderful process of comb-building, and then reflected upon how the bees proceed like a single individual, instead of separately, as the colony really is a congregation of thousands of individuals, will come to the conclusion that the fewer obstructions in the cluster the better.

I never witness this inspiring thing—comb-building—without being filled with wonder and admiration; the process moves so smoothly and harmoniously along that the little creatures seem under an inspiration. Now single out one bee and observe how it bites and pinches and builds the new comb. Now see another bee coming with a new white scale of wax in its pincers, touch the first one from behind, which moves right out of the way, and the other takes her place and puts the flake on the jagged edge of the new cell, pinches it fast, shapes, molds, and fashions it into wonderfully delicate and beautiful comb; and very soon another bee with another flake of wax comes along, and in turn takes the place, and so the process goes on over the different points of the new comb.

Well, this is what I am driving at : I can not help believing that the divider that offers the least obstruction possible to the free and easy movements of the bees is the one that will give the best results. If it be composed of pretty wide slats, and the bees have to crawl through narrow passages, their interests and energy will in no small degree be weakened ; and in many cases the bees, instead of working cheerfully on, will set themselves at gnawing to enlarge the passages, or to daubing propolis or stain, and then you will have woe-begone sections enough. Now, Mr. Editor, may I suggest that it will not cost very much to set up a gang of bits and have the thing just right? I doubt if a ⅜-inch hole will ever be improved upon ; the bees walk right through them with no effort at all. They don't seem to object at all to the dividers as I now make them. Please allow me to send you a sample.

I believe your fence is all right for separators, for there is work on both sides of them, but not so with the dividers. Surely there are not many bee-keepers who would stick at a cent or two per hive to have the very best. The bits must be in good order, so as to cut clean and smooth, and the divider sandpapered. It pays to remove every excuse for daubing propolis. Please your bees and they will please you. Study their wishes and they will gratify your wishes generally.

Belmont, Ont., Can., Dec. 15.

[You may be right in thinking that ⅜-inch holes will be preferable to slats spaced $\frac{2}{12}$ of an inch apart. But this coming season will determine whether the fences clear up to the outside row in the supers we are sending out will accomplish the results desired; namely, in having the outside faces of the outside rows as well built out as the faces of the inner rows. —Ed.]

CALIFORNIA THE LAND FOR THE SICK.

A Handy and Efficient Remedy for Croup; Health Regained; California's Resources.

BY J. M. HAMBAUGH.

Two years ago the 20th of last May I embarked with my family to this far-away sunny clime. The causes that prompted us to undertake so stupendous a change were many, chief among which was the breaking-down of my health, caused by a yearly recurrence of the grip, added to chronic catarrhal trouble of the head. This malady was quite fixed, having bothered me from my youth. My wife and oldest daughter were also troubled by the same disease. The climatic changes of Illinois seem to aggravate those troubles, and very few ever recover from the malady when it is once engrafted into the system.

The trouble in our case was not only the suffering consequent from this and other disagreeable diseases, but the continuous and never-ceasing doctor's bills, making no small item of expense yearly. Life, as you are aware, without health, almost seems a burden; and now to sum up the benefits derived.

On our way down here from Pomona, a distance of 100 miles, we traveled in our surry; and from exposure our baby boy, Louis, took a severe cold, resulting in croup, which came near a serious termination, while at Capistrano, the first night out; and never in the history of my life did I spend such a night. Imagine being awakened from your slumbers near midnight, in a strange land, and among entire strangers, with that dread disease, croup, in its most hideous form, fastened upon your baby boy, and no remedies at hand to check this rapacious monster. We were by no means ignorant of remedies for this disease, having had years of experience with our older children, chief among which was the alum-and-honey remedy. In our lunch-basket was the desired honey, but no alum. The disease seemed to be making rapid headway, and something had to be done, and that quickly. I ran down stairs, but no light could be found about the building. Everybody had retired. A faint light glimmered from across the street, which seemed to emanate from a store or business house. Hastily I ran across the street. The door was open, and I quickly entered, to find I had stepped into as hard a looking place as could well be found in California or Arizona. A bar was at the rear end, with decanters and fancy bottles, wine-glasses, tumblers, etc., promiscuously arranged. A trio of swarthy greasers was carelessly lounging about, and some obscene pictures hung boldly from the wall. The strong voluminous fumes of tobacco dealt heavily upon the sense of smell; but as my mission was imperative I made known my business in short order. There being no one behind the bar I inquired of a lounger, "Are you the landlord?"

A gruff response came, "Other room!" pointing to an open door.

I hastily stepped in. Here the tobacco fumes were next to blinding. A round table occupied a central position in the room. About it was seated a husky-looking quartette of gentry, cards in hand and cigars in mouth, and noticeable were two piles of money at opposite angles on the table.

"Are you the proprietor?" I inquired of a party next to the door.

"I be," came as a gruff response.

"Excuse me," said I; "but I have a child across the way dangerously ill with croup, and am looking for a lump of alum. Have you any?"

"No alum about these diggins," came in a surly tone, and I beat a hasty retreat, believing that hell was not one hundred feet from those premises.

When I returned to my room, the child in its mother's arms was struggling for life in one of the spasmodic spells characteristic of croup. It seemed to us he could never recover, and would never see the light of another day. We remembered that, back in Illinois, our neighbor claimed that coal oil was a sure cure for croup. There was a lamp in our room, not in use, that had some oil in it. We decided to try it. We poured probably 30 drops into a teaspoon, and gave it. This caused nausea in a few moments, and in five minutes or less he vomited a large quantity of phlegm, to our delight, as we very well knew we had mastered the disease, and our precious boy was saved.

He rested sweetly the rest of the night.

Well, the following day we reached our point of destination, Escondido; but our baby was quite poorly, and we feared a return of croup; and as soon as we were comfortably situated I went to a doctor and procured medicine, which cost me $1.50. The croup did not return, but the child lingered on the verge of lung fever for several days, which required close attention and care. He pulled through all right, and has not had one minute's sickness since, being over two years ago.

As regards my own health, I have been very much benefited, and the return of grip has been very light. My wife and daughter have also been very much benefited, and, save the setting of a broken arm for my little boy Stephen, which cost me $20, my doctors' bills have not exceeded $5.00. There are a great many invalids here in this country, mostly from the Eastern States, who have come for the regaining of their health, and in many instances they make a rich harvest for the doctors. A few come too late, and are soon laid to rest beneath the soil upon the sunny slope of the great Pacific, while many, like myself, recuperate their wasted energies under the benign influence of the salt-water breeze. A large majority of our citizens have come from east of the Rocky Mountains. In this locality, Illinois and Nebraska seem to be the best represented. We not only have a delightful climate, but we have a country with a brilliant future, and it only needs development to make it cope with our more pretentious sister counties. Our natural resources of soil and water are here, and, with capital judiciously utilized, would make a veritable paradise. Fruits, both citrus and deciduous, grow to great perfection, and in quantities, in many instances, beyond belief. This is also a great grain-growing country, chief among which are wheat, barley, and oats, as the capacious storage warehouses of San Diego and Escondido at present bear testimony. There are also many localities that grow corn, though corn is not king, as in Iowa and Illinois.

Last, but by no means the least, are the wonderful resources of San Diego Co. as a honey-producing country. When I first came to California, in January, 1895, I had the pleasure of attending the 25th aniversary of the organization of the Chamber of Commerce of San Diego Co., and one of its organizers (name forgotten), in his speech, pictured very glowingly its birth and growth, and in a statistical review of the county's products that had been put upon the markets I remember that of honey was so fabulous that it was bewildering and beyond our comprehension; and the financial returns were more to the county than any other one product at that time.

Well, since my debut as a citizen I now begin to feel endowed with authority to speak, and will give you my first year's experience as a bee-keeper in the Golden State.

I bought 20 colonies of bees in February, 1897, and moved them a distance of nine miles. I had on hand ten colonies I bought the year before. I transferred them all out of their original hives into ten-frame Simplicity, and had most of the combs to cut out of the frames, and transfer into the regular standard Langstroth frames. This put them back fully two weeks, and my neighbor bee-keepers were having swarms and extracting quite a while before my bees were showing any signs of increase; but I never experienced such rapid growth in colonies; and with what rapidity they drew their full sheets of foundation, with which they were furnished, into comb! and then the fun commenced. One colony was robbed when first transferred, and I had to requeen three others, making 29 colonies in working trim the commencement of the season. I was not prepared with sufficient surplus arrangements to keep down swarming by increase of storage capacity, and I had to let them increase largely by natural swarming. For three weeks I was so busy I hardly found time to eat. I increased my stocks to 52 colonies, and many of the hives had two and three swarms. I just put on surplus arrangements to suit, and returned a great many second swarms to the parent colony. As to honey, I secured 46 cases of 120 lbs. each, making 5520 lbs., being nearly 190 lbs. per colony, spring count, and 100 lbs. of beeswax. This is official, and is not bad for a tenderfoot novice. This is by no means startling to the resident Californian; and were I to tell you of the wonderful yields of honey as told to me by reputable citizens you would class me among the chronic California prevaricators.

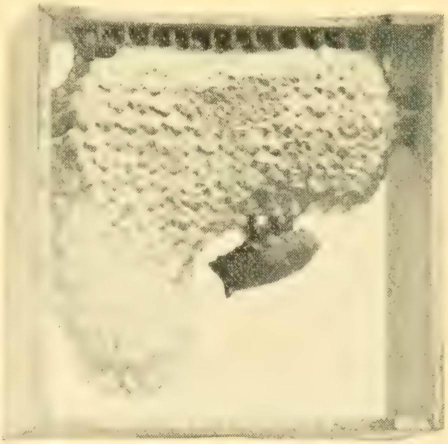
Escondido, Cal., Oct. 16.

* * *

THE WASP'S NEST IN THE HIVE.

BY B. F. BARR.

I send you a picture of a wasp's nest that was built in a Simplicity hive on the first sections above the brood-nest, last June. I was very much surprised when I saw it. The corners of my hives all have a piece of tin nailed around them to keep them from springing open, and the covers also; and I make all the brood-frames fit tight. There was no place that I could see where the wasp got in, except at the entrance. I don't like top ventilation. I never saw a wasp around my hives when I had bees in them. The bees daubed it all over with propolis. You can see where the propolis is dropping out of the end of it. It was filled full.



Flagler, Ia., Dec. 20.

[This is indeed quite a curiosity. I have seen wasps flying around the entrances of hives, but I have never seen one that was slick enough to glide in without getting caught. I can readily imagine how a wasp might dodge in; but how one could actually build a nest on a comb of honey is not so easy to explain, unless, perchance, this section of honey at which we are looking had been partly built out from the previous season. If it had been put on to the hive a little earlier, before the bees began in the super, a wasp might, after getting through the entrance, be able to make a nest for itself in a comparatively empty super. But it seems the bees must have "put on the finishing touches," from the fact that they smeared it all over with propolis, and plugged the hole up with the same substance, and the wasp was evidently interrupted in its work. I pity it.—ED.]

CALIFORNIA ECHOES
By
John H. Martin

HOW MUCH HONEY IS CONSUMED IN LOS ANGELES?

This is a rather hard question to answer. It is said that more honey is consumed in cold than in warm climates. Los Angeles is in the semi-tropic belt, and should consume but a small amount of honey; but as it is the center of or shipping-point for a large amount of honey, many pounds must drop in here for home consumption. From observation of the amounts sold in stores and by peddlers we risk the estimate at ten carloads of 20,000 lbs. per car, or 200,000 lbs. This would give a consumption of only 2 lbs. per capita in this city of 100,000 population. To raise the per capita of consumption to 20 lbs. is an interesting problem to solve, and who will solve it?

Two bee-keepers from our lower country have been doing excellent pioneer work in our extreme Northwestern States.

The new Weed process of selling honey is another move in the right direction. Now that we have gotten the production down to such a science, we should scientificize the disposal of it. We should also remember that there is not enough honey produced in the United States to go around if properly distributed.

From the low lands and *cienagas* (swamps) along the Sacramento and San Joaquin Rivers, where the tule grows in luxuriance, there is much honey produced, and of a very dark color. This honey is worth but 1¾ cts. per pound, so quotes the San Francisco papers. It is safe to say that there is not much produced at that price.

The alcohol test is a very simple one for detecting the presence of glucose in honey. Glucose seems to have an affinity for alcohol; and when a small amount of the latter is poured over the surface of the mixture the glucose will send up little threads and balloon-like bubbles into the alcohol. Alcohol placed upon the surface of pure honey creates no agitation whatever.

There are colonies of bees within the city limits of Los Angeles, in spite of corporation law; but the most of these colonies are in houses where they are not wanted. There has been an estimate given that there are a thousand colonies so domiciled. From our point of view, the estimate is far too large. After a residence of nearly two years in this city, and after no little observation, we don't believe there are over one hundred such colonies.

Mr. W. D. French, of San Diego, went to Oregon with a car of honey, and after a few weeks of work disposed of it at a fair price. Mr. J. C. Kubias is performing the same trick in Montana. Mr. K. is evidently doing well, for over a car of honey has been shipped to him. As an evidence of prosperity, he recently returned with a dog that weighed 180 lbs. A few more enterprising and get-there salesmen would revolutionize the honey market.

In the Chamber of Commerce, in this city, are several jars of pure extracted sage honey. Some of these jars have been on the shelves for over two years, and the honey is as clear as when placed on exhibition. Pure sage honey will remain liquid a long time. Some producers go so far as to claim that it will never granulate. And, by the way, the said Chamber has gotten out a new pamphlet for free distribution, describing the various beautiful features of Southern California.

A book has been written by a Los Angeles woman, in which she asserts that the human race has full power and dominion over the animal kingdom. "All insects," she says, "will go from your body, your house, and your farm, if you bid them go, and do it in love. They are intelligent, and respond to the spoken word *togo*." Well, now, we'd like to see her try that on a colony of Cyprian bees. She might start in with the love-racket all so gay, but in the end the Cyprians would hold the farm. Come to take a second thought, '*there air* some wimmin folks" that have been known to talk every thing off the farm but themselves. We think the bees will stay, sort o' peppery, like the woman.

Tom Wee Ling is a progressive Chinaman. He is the only bee-keeping Chinaman we know of. The majority of his countrymen take to the laundry business or to gardening. But Tom has a ranch in the Soledad Canyon, and, seeing his neighbor, Mr. C. H. Clayton, taking off tons of honey, his fever in the same direction was excited, and the result is an apiary and several tons of honey. Tom Wee Ling is, furthermore, so progressive that he has become a member of the Exchange, freighting his honey over forty miles by team, and putting it into the Exchange. When he put his honey in the warehouse he said, "Me sell my honey all samee like Mellican man." [If you will send us a picture of Tom Wee Ling we will half-tone it for GLEANINGS.—ED.]

Those bee-men who have been trying to get the government to import *Apis dorsata* should take courage, for the Secretary of Agriculture has given his assent and approval for the importation of *Blastophoga psenes*, or, in a shorter term, wasps. To grow Smyrna figs to the greatest perfection needs also the Smyrna wasp. Pollen from the wild (or Capri) fig must be carried to the cultivated fig, and blastophoga is the insect to do the work, even if it costs the government several thousand dollars to import it. There is this difference, however, in the opinion of bee-men and the fruitgrower. The latter are unanimous in the necessity for the importation of the wasp, while bee-men are divided in their opinions in relation to the usefulness of *Apis dorsata*, even if imported.

In our conversation with bee-keepers we constantly find the idea advanced that a square frame or a cubical hive is the best for the best welfare of the colony. We have the old argument over again that bees must cluster into a spherical ball. It is on the same plan in which a cat or a dog or a rattlesnake, or even a man, sort o' curls up into a ball more or less in cold weather. It is all according to nature —a very good argument, perhaps, for a cold climate. Father Langstroth, whose judgment is not to be questioned, after due study and experiment adopted an oblong brood-chamber. He even went further, and advocated a very shallow hive in later days. Langstroth's good judgment is verified by the fact that bees winter well, even in cold climates, in wonderfully cramped places; but what earthly use is there for applying that ball theory, and adapting hives to it in this favored land where bees fly every day in the year, and where bees in the wild state winter successfully in some of the most cramped and crooked places that can be imagined? Let's give the ball theory a rest, especially in semi-tropic countries.

It is really amusing to see how those fellows flounder around the statement made by J. F. McIntyre, at the national convention. He said, "Bees store less honey for a few days after extracting" (cleaning and repairing that great amount of comb, you know). Now, not one of the writers seems to know, or else willfully ignores the fact that there is a hive that overcomes that objection. Just step out to my shallow-frame Heddon-hive apiary. Three supers are on. We go over the apiary and extract one full super; a super with empty combs takes its place; and the bees, having two other supers partly full, do not miss the 25 pounds we have taken, and keep right along at work just as though nothing had happened. Then some—yes, nearly all of them—write and write about hives great or small—eight, ten, twelve, or more frames, and all the pros and cons. Now, we have in the above hive the happy combination of both great and small—one, two, five, ten cubic feet of space, or even more. What more does anybody want, we should like to know?

Our eastern brethren who have complained just a little in the past about California honey flooding the eastern market have us poor Californians under their thumb this year; and especially is this the situation respecting comb honey. A good honey yield in the East means a large amount of comb honey. Extracted honey is not so generally produced in the East as it is in California; consequently California comb honey must go begging for a market or be sold very low in competition with the eastern product. Owing to our excessive freight rates we are hardly in position to compete in a location where low rates already prevail. A large amount of comb honey is still in the hands of the producers in this State, with not much prospect of a movement unless the bee-keeper will sacrifice his honey at the ruling price of six cents per pound. Extracted honey has moved more freely, but we can not boast of a very lively demand for that. The great tide of prosperity has so far left the honey industry out in the cold.

Ants are something of a nuisance in this hot climate, and there are not a few instances where they have driven bees from their hives. Several plans have been devised to protect the hive from their depredations, but these devices are generally too expensive for general introduction. A genius residing in Newhall, Cal. (Mr. Tilton), observing that ants will not crawl over a chalk-mark, went a little further, and has invented something entirely new. A cast-iron standard about two inches in height is surmounted by a neatly turned disk of chalk. Place four of these under a hive, and the bees can work happily, and the black and rapacious neighbors of the ant-hill can not molest them. Bee-keepers who use the bee-escape find that, just as soon as the bees get out, the ants get in. Every apiary in our wild lands is surrounded with numerous ant-hills, and a force of bees must be kept constantly busy repelling the intruders. The chalk device gives this force liberty to hie away to the fields. Perhaps it will pay to use the chalk ant-excluder.

Apropos of a plethora of honey in trade centers, shouldn't measures be taken for a more general distribution of it? Proper distribution and the prevention of adulteration are both necessary for the welfare of our industry. The new U. S. Union proposes many things in this line; but after a year of existence its doings have caused scarcely a ripple in bee-dom. There are parties who wish to marry the new Union to the old National Union. That may be right and proper; but wouldn't the new Union be a rather weak bride? We would suggest that the new Union make a record as glorious as that of the old Union; then the marriage ceremony might meet with the approval of the relatives on both sides. Let us have a little prevention of adulteration of honey right off. Aggressive work will give heart to the organization, which it evidently lacks at present. Come to think the matter over, perhaps a few dollars would give the organization as much life as any thing; so, here goes a dollar. We hope bee-men will follow our example. [The new Union is not much behind the old in strength; and if it keeps up its present record it will soon be ahead. It is too early for it to get in work yet.—Ed.]

There are traces of blueness beginning to appear upon the faces of bee-keepers on this coast. This marked characteristic begins to appear at the corners of the mouth. If there is but little sale for honey, and at a low figure, the tendency of the corner of the mouth is to drop. This indication is very strong on the faces of bee-keepers just now. The mouth-corner drop, as we may term it, is intensified by continued dry weather—only two inches of rain, and now it is the first of January. In addition to the drop, a sad look takes possession of the eye. No rain means no honey and no money. Some of the most sad are predicting another no-crop season. There are still some hopes of a generous honey crop, even though we do not get the rains until February or March. Our hopes will be strong until that date. We wish to say, however, that parties who contemplate coming to this State had better wait until they hear that we have had several inches of rain.

PERSECUTED.

A bee-keeper in Redlands, Cal., has for several years been located at the entrance of a small canyon near Redlands Junction. The apiary is upon land he has taken up under government claim. Below the canyon and apiary is a wide stretch of land suitable for the cultivation of the orange, and many orange-groves and residences are there located. A reservoir for irrigation purposes is located not far from the apiary, and has done service for all concerned for years, and no complaints made about the bees getting into and fouling the water, or of disturbing the peace of the residents. Recently a millionaire (so reputed) has purchased a residence and an orange-grove near this apiary, and straightway there is trouble about the bees. It has just been discovered that they are a nuisance in many ways. They sting the men at work in the orchard; they foul the reservoir; gather in multitudes at the watering-trough, and sting horses. Millionaire has commenced suit against the bee-keeper; demands a removal of the bees, and, in addition to this, he wants $1000 damages. The bee-keeper is a man of peace, and has done every thing in his power to pacify his wealthy neighbor. He has even agreed to move his bees back an eighth of a mile into the canyon; but millionaire says, "No, sir, you just get out, I own this whole country." This would be an excellent case for the Union to try, but, unfortunately, the bee-keeper is not a member. We shall keep watch of this case, and hope the bee-keeper will win the suit. The case, however, should admonish every bee-keeper to become a member of the Union.

A GREAT amount of correspondence has come in within the last month regarding the fence (cleated separator) and the plain section (no-bee-way)—so much, in fact, that it is simply voluminous. We have been almost buried up with correspondence, and it has been almost impossible for me, at least, to give prompt replies. I beg of my friends to make their letters as brief as possible, and forbear if I do not answer at once. I hope to be caught up in a few days.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE. BORODINO, N.Y.

CAUSE OF SOUR HONEY.

Question.—What is the cause of uncapped cells of honey souring and running out of the cells? When I took the sections off the hive I spread them on the floor in a low room next a roof, which had one low window toward the west, and a door opposite the window, which opened into another room. I thought I had a nice room in which to keep my honey, but it did not keep. Was the trouble with the room or with the honey? What can be done with the sections to make them salable?

Answer.—In the first place, sections having many unsealed cells can not be called "salable" as compared with nicely capped honey of the same quality or kind, and such unsealed honey should have been allowed to stay on the hive till all of the cells were sealed, except perhaps a few bordering on the wood around the outside of the section. When thus capped, honey is not as liable to sour as is that which is unsealed. Thus it will be seen that a part of the trouble came from taking the honey from the hive before it was ready, or "ripe." Then there might have been some trouble with the honey, for I have noticed that certain kinds of honey, like apple-blossom and dandelion honey, will not ripen up in the same room in which clover and basswood honey will grow better all the time. Then in certain seasons the bees will seal up honey very much more unripe and thin than they do in other seasons; and the more unripe honey is, when capped over, the more liable it is to deteriorate in a room in which thoroughly ripe honey would keep in comparatively perfect condition for some length of time. But all honey will usually ferment, become sour, and eventually run out of the cells, if kept in a damp cool room like a cellar. Any room, or article in such room, will draw or take on moisture rapidly if allowed to become much colder than the surrounding air at any time, and this room might have been colder than the surrounding rooms, hence attracted moisture to it. If the room had been well ventilated it would have helped much; and had it been thus, coupled with the suitable warmth, I can not see what hindered the honey from evaporating all right. I have found that a high temperature in a room is of very little service if said room is so tight and close that no draft of air can carry off the moisture. Consequently honey should not only be kept in a dry warm room, but there should be enough ventilation in and about said room to carry off all moisture which evaporates from the honey; and the larger the pile of honey stored in the room the greater should be the draft or ventilation. If you had such a warm, dry, well-ventilated room to store your soured honey in, it would in all probability thicken the honey again, but would hardly make it salable; for honey which has once soured will never become fit to put on the market, unless one cares nothing for his reputation or for the good of the market for other bee-keepers. I have returned such honey to the bees, and let them try their hand at making it marketable again; and while they will dry and clean it up, even if they have to remove the whole from the cells and redeposit it again, still it is an unpleasant job all the way around, and at best the honey never looks as nice as it did when first removed, and in taste it can not be called good honey any more. The best thing that can be done with it is either to extract the honey and keep it for feeding purposes, after scalding it, or cooking until sufficiently thickened, allowing the bees to clean out the combs, or feed the honey to strong colonies right from the combs, when in either case the combs will do for "bait" sections the next season, after being leveled down with the comb-leveler or an uncapping-knife.

But I see I have failed to notice one very important point in this matter. You say that, when you took the sections from the hive, you "*spread them on the floor*," italics mine, for I wish to emphasize those words, so that no one will ever place nice section honey directly on the floor of any room. When I first commenced keeping bees I used a room quite similar to that described by the questioner, and did just as he did in putting the sections on the *floor*. When I came to crating that honey I found that those next the wall of the room and the floor had soured, and the honey was bursting from the cells, while that higher up in the room, and out from the wall, had not grown thin or watery at all. I took the hint at once, and the very next year found me with a temporary platform fixed of slats, the same spread apart enough so that the edges of the sections would just catch on them, said platform being raised up a foot from the floor. When another tier of sections was to go on top, strips were placed between, and so on clear to the top of the pile, and in this way there was no hindrance to the air from circulating all through the sections, above and below and between.

All these are little matters; but the whole of these little matters, applicable to every phase or part of bee-keeping life, when put together to make one great whole, make all of the difference between success or failure in our beloved pursuit, according as we understand and use them; and the finding of these little matters in print, in our different bee-papers, is the very thing which keeps our tender feet from being lacerated and torn by blundering on the snags which we should otherwise find in the way.

A plainly dressed woman was noticed to be picking up something in one of the poor slum streets of one of our cities where ragged barefooted little children were accustomed to play. The policeman on the beat noticed the woman's action, and watched her very carefully. Several times he saw her stoop and pick up something and apparently hide it in her apron. Finally he went up to her, and, with a gruff voice and threatening manner, demanded, "What are you carrying off in your apron?" The timid woman did not answer at first, whereupon the policeman, thinking she must have found something valuable, threatened her with arrest if she did not show him what she had in her apron. The woman opened her apron and revealed to the astonished policeman a handful of broken glass. "What do you want with that stuff?" asked the policeman. The woman replied, "I just thought I'd like to take it out of the way of the children's feet."

The dear soul was doing what she could to save those children trouble. And shall we not imitate her example, each and every one of us, by doing all we can by way of telling others how they may avoid the mistakes we have fallen into? How much better and "sweeter" the bee-keeping world would be if each of us would be careful to save the "bare feet" of the "young and the weak" in the way!

Heads of Grain FROM DIFFERENT FIELDS

HIVINGS WARMS WITH CLIPPED QUEENS,

In the bee publications I have read regarding the hiving of swarms with clipped queens, the instructions are to find and cage the queen; remove the parent colony, and place a hive with empty combs or foundation on the old stand, and allow the queen to run in with the returning bees. Now, Mr. Editor, I should like to know if you have ever tried the following, which has worked like a charm with us this summer. Have your empty hive ready on a new stand. When the swarm issues, cage your queen in the usual way, and tie the cage on the end of a 12-ft. pole and elevate where the bees are flying thickest, when they will cluster around the cage and pole, and you can then carry them to your new hive, and dump them down in front, releasing the queen as the bees run in. This seems to me to carry out nature's intentions better than the other method, as you give the swarm what they issued for—a new home and a new location; besides, in the moving method all the field-bees on returning go in with the swarm, when, according to Nature's way, they should remain with the young bees in the parent hive.

J. M. MITCHELL.

Indooroopilly, Queensland, Aus., Nov. 16.

[Yes, I have practiced your plan a good many times; but it is very much inferior to the other way—the one described in our catalog, and the one that is used by the great majority of practical bee-keepers. By the plan mentioned above, it is necessary to hold the pole (perhaps at arms' length), and wait till the bees cluster on it. On the other hand, by putting the queen at the entrance of the hive, to receive the swarm, the bees will go to the hive automatically, and relieve the apiarist of the necessity of any further work.—ED.]

THE FENCE AND PLAIN SECTION IN ONTARIO.

As promised in my last I attended the Ontario B. K. Association at Hamilton, and took the new fence separator and no-bee-way sections for exhibition and criticism, in order to find out the good and bad points, if any. The attendance was, of course, larger than at our local association meeting; and, as a result, a greater diversity of opinion occurred regarding them. No valid objections, however, were presented, nor any thing new, except what I have already given you. Some thought a section 1½ inches all round would hold too nearly a pound for their market, and thought it impossible to satisfy all as to the exact size each should use. Quite a number, nevertheless, concluded to give the new combination a trial the coming season. F. A. Gemmill.

Stratford, Ont., Dec. 13.

DRAWN FOUNDATION, SECTIONS, AND FENCE.

The drawn foundation you sent me the past season was put into sections just at the close of our main honey-flow. The super was filled out with sections with starters. The deep-cell foundation was filled and completed, while those with starters were scarcely touched; but you could very readily detect toughness in the eating thereof.

I am much pleased with the new fence separator, having tested a few the past season. I believe the fence and new-style section are what bee-keepers are wanting, to avoid so many partly filled vessels in storing and shipping. W. J. Copeland.

Fetzerton, Tenn., Dec. 7.

A HONEY SOCIABLE.

As we had some 4000 or 4500 lbs. of honey, and each section had to be cleaned before marketing, as is the custom with all bee-keepers (I guess) we thought we would ask the ladies of the Christian Church, who meet around one day in each week, in the capacity of a sociable or "aid society," at sewing, quilting, or other similar work. They thus promote sociability, and raise something to help pay their pastor's salary, and help those who need help. They signified a willingness to come, and come they did, some twenty of them, and a sweet time we did have. Some was here by 9 o'clock, and they worked well with hand and tongue. Of course, we needed to oversee the work and get them started right. Considering every thing, they did the work well, and cleaned about 1500 lbs. that day. I got dinner for them, and paid the society $2.00 besides. They did not ask any thing but their dinner, as each one works all she has a mind to, and pays her 10 cts. to the society, so they were well pleased with their day's work. They paid about $4.00, and we all had a very pleasant time, and closed with prayer.

Each one wore a calico dress and apron, and brought a sharp pocket-knife. Some little honey was injured, but not any more than when I hire a woman to do the work; and so much of it was done all in one day that I thought I should have to have them another year, as they requested.

For such a gathering, every thing should be in readiness before they come, so that the owner of the honey can have a little leisure to keep watch and see that the work is done right—not only to be started right, but see to it clear to the close, that it is not slighted or injured. Unless we do that work our own selves, it is hard to get honey prepared for market without being defaced in some way. The honey should be set in piles in the center of warm rooms, so the workers can sit around the pile; and when sections are cleaned we pile them up on division-boards in piles back against the wall, and carry them away. I like them set the same way up they come out of the super, not turned on to their side. Each one had a board to lay on her lap, to catch the wax and shavings. A division-board we use in the hive with a cleat clear around it makes a good board to use. Mrs. L. C. Axtell.

Roseville, Ill., Dec. 13.

BEGINNER'S
QUESTION
BOX
BY E.R.
ROOT.

A. L. C., Mich.—We do not think it would be practicable to do without separators in the case of plain sections. Separators could be dispensed with in connection with the old-style two-bee-way sections, but not with the no-bee-way, because if there is a slight bulging it would be impossible to case the honey.

P. D., Kan.—The circular you send is about the same old thing that used to be issued some twenty years ago by one Lizzie E. Cotton. There is nothing new or modern about it. It is not based on convenience, and certainly no practical bee-keeper of to-day would think of adopting it. Some twenty years ago Mrs. Cotton used to sell the book and recipes for $20.00; but now a relative of hers has come down a peg—$4.00.

F. B., Quebec.—The object of having the end cleats in our fences longer than the middle cleats, was for the purpose of support, for the fence is supported on these cleats as they drop down between the section-holder bottoms, and are supported on the tin strips. Our issue for Jan. 1st, Trade Notes department, will, I think, make this plain to you. The object of dropping the middle cleats down a bee-space on the top slat is to discourage the bees from making holes in the corners of the sections. When these cleats drop down a bee-space, the chance of having the honey filled clear out to the corners of the sections is very much greater.

F. E. K., Minn.—I do not really know how you can avoid dampness in your cellar unless you go to the expense of putting in a good drain to take away surplus water. But experience has shown that dampness is not necessarily an obstacle to successful wintering. The main thing is to be able to control the temperature — that is, not let it go up too high nor down too low. It should usually not go above 50 nor below 40 — 45 being the nice golden mean. If your bees are quiet, no doubt they are doing as well as could be expected. The temperature of the cellar may be lower if the covers are on the hives as well as the bottoms, ventilation being secured only through the entrances. In cases where the temperature is liable to be up to 50° or above, it is well to have the bottom-boards removed entirely.

J. B., Mich.—I should really enjoy telling you how to make photos, and all the details therewith connected; but I have all I can do, and more too, to answer questions about bees; and if I were to essay to act as instructor in amateur photography I should be swamped, so I must most respectfully decline. There are most excellent text-books on the subject. But unless you have a little spending-money you had better let the fascinating art alone, for it costs, and there is little or nothing in the way of financial returns. But it pays me, or us, rather, because I use my best pictures for our journal, and intend at all times to keep posted in regard to the latest developments in photography and half-tone engraving, for that is a part of my business, but it is a little bit out of my line to explain the art, when there are so many good books for that purpose. Apply to E. & H. T. Anthony & Co., New York, or the Eastman Co., Rochester, N. Y.

J. A. U., Neb.—The arrangement that you speak of, of deep supers containing two and three rows of sections in a wide frame or section-holder, is something that was used years ago, but which has been almost entirely abandoned. The great objection to such deep supers is that the several horizontal tiers of sections can not be reversed or alternated. Then, moreover, the bees will go into deep supers much more slowly than into shallow ones. These latter permit of getting only one tier of sections at a time, or as much as the bees can keep warm. As soon as the first tier is pretty well along it is raised up, and another super containing sections with foundation is placed under it, and so on room is added as fast as the bees can use it to advantage. By the plan that you propose—of three tiers, one on top of the other—it will be necessary to give the bees three times as much room as they require, at the start; and before they can build comb they must warm up somehow that great barn of a space. It is more practicable to heat up a small space than a large one, and that is the reason why a shallow super is preferable.

W. H. E., Kan.—We think you would be making a serious mistake if you adopted the plain section 1⅞ x 3⅝ x 5. While, no doubt, it would hold a pound, or even more, the comb would be so thick it would be poorly filled out You can get far better results by using the 4 x 5 x 1⅜, for then the comb is about as the bees make it in ordinary brood-rearing. Such combs, you will find, will be flat, like a marble slab; will be sealed quicker, and the honey will be ripened better.

But the great majority of people prefer the scant pound section, and for such our Ideal 1½ x 3⅝ x 5 does very nicely. You will need to consider this point very carefully. A box 1⅞ x 4 x 5 would hold about 1½ lbs., especially if you intend to use it with a fence. A plain section 4 x 5 x 1⅜ holds just as near a pound as it is possible to get it, on an average. If you could be at our establishment for a short time we could show you some very pretty combs on this order. If you are going to make a special hive, you had better have one adapted to take the 4 x 5 pound section 1⅜ in. wide. This, as I said, holds a full pound — that is to say, some sections will run slightly under and some slightly over. We shall be glad to advise you further. In the mean time I am rather of the opinion that the new Danz. hive, super and all complete, would be just the thing you are looking for. We send you Mr. Danzenbaker's book, and should be glad to have you peruse its pages carefully.

A. H. N., N. Y.—Knowing your locality, or the one you propose to commence bee-keeping in again, I think I would advise you to use the staple-spaced frame as was illustrated in our Nov. 15th issue, page 817. I base this recommendation on the supposition that you have a great deal more propolis than we have here in Ohio, and I know that this particular frame is giving much satisfaction in the vicinity of Gallupville, N. Y., and, in fact, all through Albany Co. As to whether you had better adopt a ten or eight frame size of hive is hard to say. If you intend to produce extracted honey largely, then I would unhesitatingly recommend the ten-frame; and even if you intend to produce comb honey principally, it is very possible you would like that size better. As to the comb-honey super, I think the tall section with fence, especially for the Albany and New York markets, would be the best. Our Ideal super that we illustrated Jan. 1st showed the comb-honey combination that I would recommend.

This reminds me that you might possibly prefer this super for a brood-chamber—that is, I mean the super shell itself. It would permit you to use frames 5⅜ in. deep; and two of these supers would give you about eleven frames capacity to the hive. It is a little hard to say at this time whether the double-chamber hive will become popular in the future or not. I only know that it has some strong advocates as well as some who, having tried it, would not use it. I think, all things considered, however, that the ten-frame will suit you better than any thing else you can select. Then you can, if you desire, contract your brood-nest down to eight; but you can not very well make a ten out of an eight size.

If you were in Michigan or Illinois, I would by all means recommend the eight-frame size. If you were to go to Florida or Cuba, or some of those countries where honey comes almost continuously, I would recommend a twelve-frame size. Even in our own locality I was very much pleased with what some of our twelve-frame colonies did for us last summer, even when pushed for comb honey; but on account of their being so unwieldy I should prefer for Ohio the eight size.

By
E R
Root
Editorial

A FEW weeks ago a photo came from W. A. Selser. As it represented an idea in advertising, I have had it reproduced in half-tone, and the same appears in another column. Mr. Selser failed to send us any word of explanation, and I do not know that any is needed. This sign is made up of a two-story Root chaff hive, put up on stilts, perhaps on a vacant lot, facing a street-car line. The bee-hive, the sign, and the index finger are all suggestive as to where honey can be bought. The idea is not bad.

IN another column our friend J. M. Hambaugh tells of their experience with that dread disease the croup that attacked their four-year old. To-day a letter has come to hand containing the sad news that this dear little one died on the 24th of December, and that the dread disease pneumonia did the work. I am sorry, also, to record that our friend and brother, Mr. P. H. Elwood, lost, the day after Thanksgiving, the light of their household, a bright little boy of three years. GLEANINGS extends its sincerest sympathy to the grief-stricken parents.

> If we knew the baby fingers,
> Pressed against the window-pane,
> Would be cold and stiff to-morrow—
> Never trouble us again—
> Would the bright eyes of our darling
> Catch the frown upon our brow?—
> Would the prints of rosy fingers
> Vex us then as they do now?

CREATING AN APPETITE FOR HONEY—HOW TO DO IT.

ON p. 854 I referred to the fact that one of our government officials had gotten hold of our honey-leaflet, and how he introduced it to the general public through one of the great dailies. Again he writes as follows:

> U. S. DEPARTMENT OF AGRICULTURE,
> Weather Bureau, Columbus, O., Dec. 10.
>
> *Gentlemen:*—I have just received your Dec. 1st number of GLEANINGS, and read with much interest your article on "Casting Bread upon the Waters." As an ex-newspaper man I must confess you have perceived what so many others fail to appreciate—the value, in advertising, of at first creating a desire. That principle applies to *all* advertising; and where it is properly brought about the rest is easy so far as letting people know *where* such and such a product or article is for sale. Nothing like arousing curiosity or desire—it's the very vitals of economic and successful advertising. I am pleased to have been of at least a little service to you and your interests.
>
> Speaking *personally* of the effect of reading your "leaflet on honey," will say that, while I well knew honey was "a good thing," I had no idea of its variety of uses, nor did I appreciate fully its value as a food product. I really *learned* something *new*, and I immediately began to feel a yearning sensation that could only be satisfied with honey, and nothing but honey. These are facts, and, if true of myself, the application fits others. H. W. RICHARDSON.
> Section Director.

Our readers will not fail to "catch on" to our scheme of advertising honey which Mr. Richardson so readily appreciates; and then, bearing in mind his last paragraph, it will be seen it is to the interest of every bee-keeper in the land, who desires to sell his honey, to take every means possible to have this leaflet distributed. Why, don't you see it accomplished with Mr. Richardson *just exactly* what we desired it to do with every consumer; namely, stimulate a "yearning sensation" for the most wholesome and the best sweet in the world?

THAT IRREPRESSIBLE DANZENBAKER, AND SOME OF HIS IDEAS.

WE have had another visit from our irrepressible, wideawake, progressive Danzenbaker. Although he is on the shady side of life, when one would naturally expect him to be conservative, he is one of the most progressive bee-keepers I have ever met. He says (but I as good as told him I did not believe it) that he tried to get me to see the advantage of the plain section and double-cleated slatted separator two years ago. However that may have been, it was not very hard to get him to adopt them this fall when I began to talk about their advantages.

I believe in giving credit where credit is due, and I will say that Mr. Danzenbaker was the first one to show us the advantage of the dovetailed or lock corner; improved construction in hive-covers; improved construction in bottom-boards; the D. case — this letter D. simply representing Danzenbaker; improved method of crating hives; and last, but not least, directly and indirectly the advantages of fences and plain sections.

One of the ideas that Mr. Danzenbaker has been trying to pound into my head is that the combs of our ordinary 4¼ sections are too thick; that when they are thinner the bees will build them out better, and cap them over more evenly; and that, moreover, the combs will be better attached to the wood. He argues that a comb for section honey-boxes should be no thicker, or scarcely any thicker, than that ordinarily used for brood-rearing. I am not quite prepared myself to admit this, yet I do not say that he is wrong.

Friend D. also believes that the closed-end frame is the coming brood-frame. I do not. While I am satisfied they offer more favorable conditions for winter, they are not as convenient to handle, according to my notion, as some form of self-spacing open-end frame. To my mind, convenience is more important than a probable slight advantage in wintering.

SCATTERING THE TRUTH IN THE HONEY-LEAFLET; SOME OF THE ALLEGED TACTICS OF THE GLUCOSE PEOPLE.

DR. MILLER'S honey-leaflet is still finding its way into the great daily papers. The last time, it appeared in the Washington *Star*, at the solicitation of our friend Danzenbaker. Mr. D. managed to scrape up an acquaintance with the city editor, and then interested him in bees by presenting him some of his beautiful Danzy sections. The result was, a good big portion of the leaflet was published in the *Star;* and although neither Mr. Danzenbaker nor any other bee-keeper was there mentioned, a demand sprang up at once, in the national capital, for some nice honey, and people came to Mr. Danzenbaker by the dozens, asking him if he had seen that article in the *Star*, little dreaming that he was responsible for its publication.

I propose to mention every daily that will print portions of the honey-leaflet. First, I wish to encourage them in their good work; and, second, I wish to show to bee-keepers that, if we keep on in this way, we may be able to double the demand for honey. Although I have said it several times, I will say it again, I hope bee-keepers will get their local publishers to print at least a part of the leaflet.

Mr. Danzenbaker told me recently that some of the glucose-venders are interested in getting the ears of publishers so as to induce them to say things detrimental to pure honey and maple syrups, in order to create a demand for other (glucosed) syrups. One item he lays at their door is the statement that ordinary honey is not fit to eat, because, forsooth, the bees visit pig-styes and cess-pools, and therefore ordinary honey is contaminated, and not fit to eat. I have seen such items going the rounds of the press, and wondered why they should keep bobbing up every once in a while. Mr. Danzenbaker insists it is because the glucose people not only urge it upon the city editors, but buy them off if they can not get them to publish the stuff otherwise. I can hardly believe they will stoop to such methods; but whether they do or not, let us keep at the city editors till the facts about good honey are scattered all over the United States and Canada. Perhaps you may think I am harping on this matter too much; but I am firmly convinced that we may very greatly increase the consumption of honey if we can only get the proper kind of truth afloat. I do not know but it would be a good idea to offer prizes for the best articles suitable for the daily press, briefly written, and entertainingly setting forth the value of honey as a food. Perhaps such a course will be advisable after Dr. Miller's leaflet has become pretty well copied in the papers.

THE NATIONAL BEE-KEEPERS' UNION; A GOOD SHOWING.

THE thirteenth annual report of the National Bee-keepers' Union is just at hand. The General Manager announces that appeals for assistance for the past year have been the largest in the history of the Union. The majority of cases seem to have been in the line of defense, where bees have been declared a nuisance. As usual, Mr. Newman has dosed the mayors, city attorneys, members of city councils, etc., with copies of decisions from supreme courts, touching similar cases, and in nearly every instance they have had their usual and salutary effect, and the result is that the cases have either been dismissed without recourse to law, or the position of the bee-keeper has been strengthened.

The showing in the report is good; and although I have criticised General Manager Newman for opposing amalgamation, I have been and am willing now to acknowledge meritorious work. While my sympathies go out toward the new Union more than toward the old, I wish to give the old National all the credit it rightly deserves.

The financial report showed a balance of $541 at the close of last year. After deducting court expenses, lawyers' fees, depositions, printing, postage, salary of Manager, and incidentals, this leaves a net balance on hand of $327.

From this it would seem that the amount in the treasury is being rapidly whittled down. To my notion it is much better to have the funds *used* for legitimate work than to have a big bank account, and correspondingly less work done. Since the organization of the new Union, the old one has "got on an extra hustle;" and even if the new Union had accomplished no more, it has seemed to spur up the old Union to more and better work.

The net balance in the treasury of the new Union is $182, according to the last report. At the present rate one will soon be as strong as the other, both in finances and in membership. Indeed, I believe the active membership of the new Union will prove, ere the year is out, to be greater than that of the old one. But comparisons are odious; and I do not mean to say in this connection any thing that will reflect upon either organization. While I believe there is no need of two Unions, yet if they will not now amalgamate then let us take hold and make them both such a success that they will be worthy of each other's esteem and affection. Mayhap *some day* they will be married, and go to housekeeping in matrimonial peace. I crave the honor of holding out the olive branch.

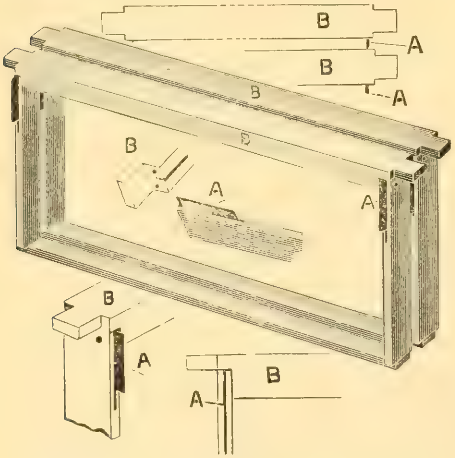
THE MARKS-HOFFMAN METAL-SPACED FRAME; CLIFTON SPRINGS SANITARIUM.

AFTER leaving Buffalo I made my way direct to Clifton Springs sanitarium, at which place Mrs. Root and master Leland were stopping, visiting old classmates and friends. I would remark, in passing, that this is a Christian institution, located in a healthful climate, in the region of sulphur springs. The sanitarium makes a specialty of nervous diseases, and hither many a business man with impaired health hies away to this quiet retreat, often taking his whole family. Dr. Foster, the founder, is most heartily in sympathy with Christian missions, and at his institution missionaries find rest and health, and at the same time spiritual uplift.

The buildings are magnificent in all their appointments, and are fitted with the latest equipments in the way of massage machinery, baths, sun-bath rooms, and every thing else that can possibly make a patient well. One of the mottoes of the institution seems to be, "Wash and be clean;" and although neither myself nor family went there as patients, we were invited to enjoy the luxury of a sanitarium bath. I will not attempt to describe the various ways in which these are taken; but I will say that when I took my bath my first thought was that they intended to scald me alive; but when I was told that the water registered only 101 degrees I could scarcely believe my eyes. I sat in this water up to my chin, after which I was requested to stand under a spray that was hot to start on, and cooled off gradually.

Near Clifton Springs is the home of Mr. W. F. Marks, Chapinville, N. Y., and with my bicycle I started off to find my bee-keeping friend. Mr. Marks, as our readers may already know, is one of the bee keepers who has so earnestly championed *Apis dorsata*. He is the leading bee-keeper of his vicinity; and if I was ever convinced of that fact it was when I was inquiring the way to Mr. Marks' home. First I asked for Chapinville. Nobody seemed to know where that was. Finally I happened to mention to one person that I wished to find W. F. Marks. Why, yes, he knew the man, and then directed me on the route. But I missed my way, of course; but from that time on I inquired for Mr. Marks, without reference to town or any thing else; and although I was sometimes seven or eight miles away, everybody knew W. F. Marks. Why! he was the bee-man.

In the course of an hour I found myself in front of his beautiful residence, the lawn nicely mowed, and every thing kept up in modern style. Fortunately enough, Mr. Marks was at home; and although he and I had in the past differed on certain policies, he welcomed me most cordially.



THE MARKS-HOFFMAN METAL-SPACED FRAME.

Mr. Marks, as I found, has done some hard work in trying to secure the enactment of a law forbidding the spraying of fruit-trees while they are in blossom. He had almost succeeded; and although defeated in the first round he is preparing for another, and I have no doubt he will succeed with the next legislature.

Friend M. showed me into his apiary and workshop. I believe there is nothing that interests me more than to look over bee-fixtures; and in his shop I found something that interested me at once.

He had used various styles of frames; and when some years ago I began to talk about the advantages of the Hoffman he tried them, but found that, owing to the excessive amount of propolis in his locality, it was not entirely satisfactory. He liked the principle of the Hoffman frame, however; and to obviate the gluing he used metal projections. The accompanying engraving will show the idea.

The metal spacers are simply pieces of strap iron chopped off in lengths of 2½ inches. These strips of iron are let into saw-cuts on one side of the end-bar. It seemed to me that these little pieces of strap iron would pull out; but if the strips of iron fit tight enough in the saw-cuts, Mr. Marks assured me they would hold their position, or at least had done so in his case. The spacers, instead of reaching half way, fill up the whole space between the frames, as shown in the diagram, A, A, at the top of the cut. Friend M. prefers to have both on one side of the frame, rather than on each diagonally opposite corner. If I were to use them I think I should prefer them diagonally opposite, so they would admit of turning the frames end for end in the hive. When the spacers are both on one side, the frame must be put into the hive always the same way to, because it would not do to put the two plain sides of the frame together.

I wrote to Mr. Marks, asking him to tell in his own words what he thought of this particular frame, and here is what he says:

> Referring to my metal-spacing brood-frames, all bee-keepers are so familiar with self-spacing frames that a description or cut of this frame is undoubtedly all that is necessary. I have not any thing to say, any more than that they give me perfect satisfaction. I find metal spacers, like the tin rabbet, less liable to be fastened with propolis. These have a 2½-inch bearing, insuring the uniform and accurate spacing of the frames, both horizontally and vertically, or, in other words, when the frames are wedged the bottoms and ends will be spaced uniformly, as well as the top-bars; with a narrow spacer the top-bars will be accurate, but are not the bottoms and ends *very uncertain*, to say the least? I like the end-bar in any frame the same width as the top-bar.
>
> Your section discussion prompts me to say, before closing, that, according to my observation, sections with full opening top and bottom are always better filled than those with curved opening. The no-bee-way section, now that you propose putting the separators together at the factory, will, I believe, be quite generally adopted. I wish now you would get some hard wood to take the place of basswood for sections. I say *hard* wood, because it is easier to scrape and less liable to stain. I except basswood, because it should be a crime for bee-keepers or any one else to use such a valuable honey-producer for any such purpose.
>
> Chapinville, N. Y. W. F. MARKS.

Perhaps some of our readers may wonder why we do not offer this as an option in our catalog for 1898. First, we should like to see it tried a little more. Second, it costs a little more than the regular Hoffman; and whether bee-keepers will be willing to pay the extra difference is something of a question. Again, third, the Boomhower stapled frame seems to offer nearly all the advantages of the Marks frame, at much less cost.

After having a delightful chat I mounted the wheel again and was soon back to Clifton Springs by another and more direct route. Mr. Marks had carefully marked out on a piece of paper the several turns I was to take. As I followed his directions implicitly I made the return trip in about half the time it took me to go out.

OUR HOMES.

[I have for some time had in mind making a protest against war as a means of settling troubles between nations. While I knew, however, that the gospel of Jesus Christ was equal to the task of settling all troubles in this whole wide world, I felt that I was too ignorant of political geography to make such a protest understandingly. While I was revolving these things in my mind, you can imagine with what interest I listened to the following sermon from Rev. B. G. Mattson; and I have, by his permission, given this sermon in place of my usual Home talks. May God bless the message If any of the readers of GLEANINGS would like copies of it for free distribution, I shall take pleasure in sending as many as they can use, postpaid.—A. I. R.]

He shall judge between the nations, and shall reprove many peoples; and they shall beat their swords into plow shares and their spears into pruning hooks. Nation shall not lift up sword against nation, neither shall they learn war any more.—ISA. 2 : 4.

It is the grand distinction of the Hebrew prophet that he placed the golden age in the future. It is still further a mark of his spiritual greatness that he should characterize that golden age, not by the triumphal return of the conqueror, laden with spoils and followed by a long train of captives, but by the simple arts and industries of peace.

In this remarkable prophecy of the golden age to come, the seer discerns that there will still be national differences to settle. The world will not yet have reached that beautiful dead level of non-individuality, apparently so desired by Mr. Bellamy. But these differences, when they arise, will find an entirely new way of settlement. The sword will be too busily engaged in cutting the soil to turn aside to its obsolete occupation of letting human blood. The spear will be too deeply engrossed in pruning the wilderness into a fruitful land. It will have no time to go crashing through helmet and shield as it did in the once barbarous but now almost forgotten time. No: when these differences arise, as they surely will, the nations shall with one accord hasten to appear before the new central figure of the golden age—Him who is wonderful in counsel, and who wears the title of the Prince of Peace. "He shall judge between the nations, and shall rebuke many peoples."

Seven centuries passed, and the Prince of Peace appeared. So much more wonderful in counsel was he than even the prophet foresaw, that it was truly said of him, "Never man spake like this man." But did he fulfill his other title of the Prince of Peace? Did he banish war? Two millenniums and more than half of a third have passed away since the prophet foretold the plowshares and pruning-hooks, yet still the sword and spear are the supreme arguments in the larger part of the Christian world; and to learn the trade of war is still the cherished ambition of Europe's choicest youth. Was the prophet wrong in his ideal? If he was, then He who fulfilled the prophecy was under the same delusion, for *he* said, "My kingdom is not of this world. If my kingdom were of this world, then would my servants fight; but now is my kingdom not from hence." To this he committed himself—to a kingdom within kingdoms—the unworldly kingdom running through all the worldly kingdoms, and the principles of this unworldly kingdom constituting the divine court of arbitration before which he is to judge between the nations.

Unmistakably, if the prophet meant any thing he meant that war must cease to hold its place as a court of last appeal; and with equal clearness Jesus also meant the same thing. But we Christian people have been slow to interpret our Teacher. We have long conceded to him authority over the individual, but have only in recent years begun to believe he has any authority over humanity in the mass. It is from him I make my starting-point in raising my voice against the arbitrament of war.

1. Jesus looked upon human life as a sacred and precious thing, and this the Christian world accepts in its individual application. For example, we need but to remember how the spirit of Christianity brought forth the hospital and the asylum as means whereby human suffering might be reduced and human life prolonged. We need but to note the righteous indignation of the Christian sentiment of the land which has practically buried dueling, and is now being exerted against prize-fights and lynching as equally embodying the spirit of lawlessness and murder. And now even football seems in danger of falling under the ban as an outlaw. All this indignation is directed against a common tendency; namely, toward cheapening the sanctity of human life.

If these values hold for the individual, why do they not also hold for the mass? Is there any thing in the teaching of Christ to limit it to such a narrow range?

2. The logic of the teaching of Christ plainly involves an uncompromising condemnation of the war spirit, not only because it tramples upon the Christian principle of the sacredness of human life, but still more unsparingly because the war spirit feeds the worst passions of the human heart. "He that hateth his brother is a murderer." To this every Christian who is thoughtful enough to reflect upon the deadly issues of hatred gives earnest and solemn assent. But the logic of such teaching presses on to the conclusion that *national* hatred finds its issue in national murder.

Douglas Jerrold says, "What a fine-looking thing is war! Yes, disguise it as we may, dress and feather it, daub it with gold, huzza it, and sing swaggering songs about it, what is it nine times out of ten but murder in uniform—Cain taking the sergeant's shilling?"

What a frightful train of moral evils follows in the course of war! — rapine, plunder, cruelty, lust, and all disintegration of moral fiber! I do not say this is true of all soldiers, nor do I say that war is never without just cause upon one side or the other. I can not go as far as do the extreme peace champions of the Quaker faith. There are obligations of self-defense which are sacred. These call for the defense of our homes and our country, and are as morally justifiable as would be the act of a man who kills the villain who seeks the life of his wife or little ones. But wars which arise to settle a point of national honor, in the diplomatic use of the word, are exactly analogous to an affair of honor (or, rather, of dishonor) between individuals. Thank God that the settlement of such affairs by the duel is practically extinct! There has come about a healthy revolt of the moral sense of the world, always excepting those German universities where the moral sense is the subject of theoretical rather than practical exercise, and where dueling is in most high honor.

When we see so plainly the moral grounds on which rests the abolition of the personal duel, can we for a single instant stop short of applying the same conclusion to the national duel? What better right have a hundred thousand men to resort to bloodshed over a point which, even by the irritable code of diplomacy, can touch each one but indirectly, when at the same time a private conflict on the same grounds is declared by the Christian sense of the world to be an immoral and disgraceful thing? Or, to put the analogy in still closer terms, what better justification have two kings or two parliaments, using each a hundred thousand men as weapons, to enter into a deadly combat over a point of honor or aggression, than have two private citizens in resorting to pistols at ten paces as a settlement of a dispute at cards?

The personal duel and the national duel must be called by the same name—murder by agreement, or, rather, murder by disagreement.

3. Again, it has long been argued that war is the great civilizer, and it has been considered conclusive to point to the fact that no history of civilization can be written without recording an almost unbroken succession of wars.

This is as much as to say, after the manner of those who unwittingly tamper with that rusty old kicking musket called "inductive logic," "Wars have occurred, and progress has been made in civilization, therefore wars have produced civilization." But the old gun is just as liable to recoil, and prove equally well that war is the *end* of civilization, since the two have gone hand in hand. One can prove any thing by such logic. The old astrologers had just as good a right to the conclusion that a certain star was the cause of a certain man's destiny, because of some observed connection in time between the man's birth and the planet under which he was born, or of its conjunction with another planet. But whether it has ever been true in the past that war has aided and not in reality retarded civilization, we do not need to consider now so much as we need to be sure of the fact that it never can be true in the future.

War is an anachronism. It is out of date. War is a relic of barbarism, as truly as is the voodoo superstition of the Louisiana negroes.

Do we seek for a cause of the advance of civilization? Civilization has come about just in proportion as brute force has been made subordinate to intelligence. It is intelligence that has built cities, cultivated fields, improved machinery, increased production. It is brute force by which all these are quickly and easily destroyed.

The war spirit is an anachronism because it seeks to enthrone brute force, and to lay tax upon the finest powers of the intelligence of men in order that brains and skill may be the servants of the war spirit.

Co-operation is the highway along which the car of progress moves. The world has become much smaller than it used to be, and consequently the nations are much closer together now than formerly. Therefore if this war tendency is not checked it must inevitably retard progress, for war is the death of co-operation. Wars henceforth can result only in tearing asunder and upheaving the cemented blocks of national co-operation which are the paving of that highway. Wars can succeed only in blocking, retarding, and overturning progress. War is the world's road agent. At the cannon's mouth it relieves prosperity of her valuables, and with scientific coolness breaks open and rifles the treasure-safe of peace.

4. The application of greater intelligence to war combines with this ever increasing nearness of nation with nation to render war far more destructive than it ever was in former times. The growing science of war makes it more deadly, and the identity of interests of one nation with another makes war more far-reaching in its consequences.

I am not sorry that this is so; perhaps in no other way can the world be made to realize the awful folly of war. When the folly of it becomes plain, perhaps then we shall by degrees come to see also that war is the hideous *crime* of nations.

Every sober-minded statesman in Europe, worthy of the name, deplores the awful wrong of war, and dreads to precipitate its calamity; yet Europe is hardly less than one vast armed camp, and the strange policy of every European nation is to seek to maintain peace by the continued increase of its armament. Strange method! What kind of peace must result? Only a strained and artificial peace. Quiet, it is true, but not that of a home, a school, or a church. Rather, it is the ominous silence of a powder-magazine. A single match will produce an explosion; and that explosion must bring disaster to a whole continent. An armed peace is no real peace, because the principle of peace is not recognized. An armed peace is merely a suspension of hostilities. There is but one true basis for peace, and that is *the armament of reason.*

5. Here is the ground for the appeal to arbitration. It assumes two things. 1. That justice and not robbery is what nations desire; 2. That the enlightened reason of impartial statesmen is capable of deciding disputes justly. Sooner or later nations must come to these assumptions, not only as they have already done for minor questions, but also for the large ones; and the ultimate outcome must be the abolition of the trial by war, and the disbanding of the standing armies. When the court of arbitration for the world has be-

come a fact, with what amazement will future generations look back upon our inhuman custom of killing each other in order to settle a boundary dispute !

Do not think this is a dreamer's prophecy. It has a good deal stronger backing than the so-called non-resistance vagary of Quakerism. Here in the United States, with three thousand miles of water between us and European complications, we have a clear field for the growth of the arbitration principle. Ever since the Jay treaty in 1794 settled a question of boundary, this principle has been gaining ground. It has carried us through many types of international controversy, and is chiefly responsible for our long peace with Great Britain. The single example of the Alabama arbitration is sufficient to remind us how severe a strain was placed upon this principle, and how nobly it stood the test ; and yet the Alabama controversy involved questions of both right and honor to both countries. Who can measure the saving to England and America, both of life and wealth, by the avoidance of war in this single instance ? Had war ensued, the real issue would have been at once lost to sight, for then, instead of being a question of right or honor, it would have become a mere question of prowess.

How great is the real advance toward general acceptance of arbitration is shown by the fact that, in the past one hundred years, the United States has been engaged in sixty-eight* cases of arbitration, and forty-eight of these were cases where her own interests were directly involved ; yet all have been peaceably settled.

In the face of these facts, is it not plain that such a record redounds more to the glory of the fair name of our nation than all the battles since the Revolution ?

The fact that confidence in the arbitration principle is slowly but surely gaining ground in this country is a sure indication that the mission of the United States among the great nations of the world is to teach this last and greatest lesson in the science of government. Shame upon the jingoistic folly of the newspapers, and many of our congressmen ! This mere braggart talk of war is as revolting as it is insane. "Cause or no cause," they cry, "we have been a peaceful stay-at-home long enough. We can whip the world, and it is time we showed our spunk." I appeal to the common sober sense of every fair-minded citizen.

What religion demands, reason also demands — the cultivation of an anti-war conscience. This is the only cure for the insanity of "jingoism." This is not mixing religion and politics, but is simply an attempt to emphasize the fact that an anti-war conscience is an enlightened conscience, and that an enlightened conscience is fundamental to both religion and statesmanship.

The day must come when the Sermon on the Mount will be regarded not only as an utterance of surpassing religious value, but as a state document as well, whose positions clearly outline the only true policy for the relations of the nations of the earth. Through the blessed truth it holds, the prophecy of Isaiah shall come to pass in a "World's International Court of Arbitration," for then shall these words be fulfilled : "He shall judge between the nations;" and, "Neither shall they learn war any more."

THE CIGARETTE BUSINESS; A STATEMENT FROM PROF. WILEY, UNITED STATES CHEMIST.

Perhaps I should explain to our readers that I submitted to Prof. Wiley the matter in regard to tobacco, found on page 25, asking him to tell us what is put into cigarettes, and his opinion in regard to the matter. Below is his reply :

U. S. Department of Agriculture,
Division of Chemistry,
Washington, D. C., Dec. 28, 1897.

A. I. Root:—I had occasion a few years ago to look very carefully into the composition of cigarettes, especially in regard to the statements which have been so frequently made, that they contain opium and other poisonous matters foreign to tobacco. After a careful examination of all the standard brands of cigarettes on the market, I was able to say positively that these statements were not true. I doubt if there is one grain of opium or other poisonous matter, not natural to tobacco, in any of the cigarettes now existing in the United States.

The baneful effects of cigarettes on young persons are due to the natural poisonous principles of tobacco, especially nicotine. The cigarette affords the best medium for conveying to the system the volatile nicotine during the process of smoking, so that a given quantity of this poisonous matter will produce a greater effect upon the system when smoked in the form of cigarettes than in any other way.

It is not necessary to look further than this one important point to secure all the argument necessary to show the injurious effects of cigarette-smoking on the young. The statement of the case is only weakened by alleging, as facts, opinions which have no foundation.

I have read with much interest the galley-proof of the article which you sent I am heartily in sympathy with any movement which will prevent the boys of our land from indulging in such a pernicious habit as cigarette-smoking. In regard to carrying the crusade further, as you propose, it is a matter in which my opinion is of no value.

Respectfully,
H. W. Wiley,
Chief of Division.

Our readers will notice that this analysis was made several years ago. If cigarettes do not contain opium or some other similar poison at the present time, I am very glad to know it. There is something very strange in regard to the craze for cigarettes, as it is certainly more enticing than the ordinary tobacco habit. The above statement from such a source, it seems to me, is enough to frighten the fathers as well as the mothers, teachers, and Christian people of our land. Permit me to ask again, especially after having read the statement above, whether the government of the United States should offer premiums to our young farmers for papers on growing tobacco, and the manufacture of cigars and cigarettes. May God help us.

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*Had some one asked me how many times the United States had been engaged in settling international troubles by arbitration, I should have said perhaps a dozen; and when I was told that already 68 cases of this kind were recorded in our comparatively short life as a nation, I could not but breathe a little prayer, "May the Lord be praised !" There are other troubles to be met — God only knows how great and how many ; and it may be, as our brother has said, that there will be cases where it must be war, just as we would use firearms to put down and subdue a gang of train robbers. But let us be sure that, where there is any possibility of resorting to arbitration, such means are well and faithfully tried before guns or other firearms are called into requisition.—A. I. R.

OFFERING RECIPES FOR SALE.

The recipe below is not a very bad swindle, after all, for the price is only 10 cts. Instead of obliging each one of our subscribers to send 10 cts., we will send it to you *all* at one clip, and then it will not cost you a cent. Here it is in full:

HOOPER'S CRYSTAL HONEY FORMULA.

PRICE 10 CENTS.

The following four ingredients are used in manufacturing the formula:

1.—Boiling water,	1 quart.
2.—Granulated sugar,	6 pounds.
3.—Powdered alum,	1 teaspoonful.
4.—Lemon,	1 thin slice.

Place one quart of water on the stove and let it boil; remove, and then add the sugar, correctly weighed, with the teaspoonful of alum, and one slice of lemon one-eighth of an inch in thickness—then place on stove and allow it to boil together from 2½ to 3 minutes, no longer, stirring constantly to prevent burning. Skim off all froth or foam during the boiling, then remove, and strain through a piece of clean muslin or lawn goods. When cold, place in jugs, fruit-jars, or tumblers, and keep it covered.

It will be found in taste and appearance precisely like virgin honey when strained. It is superior to syrups or molasses for all purposes of cooking for domestic use. It can be put up for sale in attractive glass packages, or sold in bulk in an extensive way. It may also be sold in barrel lots for table syrup, giving it any name or trademark you may secure.

There is another thing to be said in favor of this recipe—it is all made of wholesome ingredients unless it is the alum, and I do not suppose that a teaspoonful of that in a quart of honey would do any particular harm. Will some of our doctors tell us about it? Like all other recipes of this class, the above is not new. When I was a schoolboy, almost fifty years ago, I sent a dollar for a recipe for making honey, and it was almost exactly like the above, except that it did not have the lemon. No doubt this would be greatly preferable to the drugged syrups to be found in the market.

SPOT CASH; MAKING PRESENTS, ETC.

In a recent number of the *Busy Bee* our friend Abbott has given us a talk on paying cash down for what we want, and I really wanted to copy it entire, but want of space forbids.* I hope he will give the same talk at farmers' institutes all over our land. At our house we pay cash down, and have done so for years; but we just have to fight sometimes to keep the meat-man, grocer, and others from starting an account. In fact, we have had to tell the boy when he brought the meat, and said he did not know the price, that we could not take it unless he could tell how much it was worth, and took his pay.

One objection to spot cash is that it is so inconvenient to make change, especially for butter, eggs, meat, laundry, and other things that require pennies to make the exact change. Mrs. Root and I are getting old enough so we often get tired out before the day's tasks are done. I have noticed how often mamma goes all around inquiring for a nickel or a penny or two to pay the meat-man. Well, I have been threatening for some time to have a dishful of nickels and pennies. In fact, I have talked about it, but did not get at it. This morning I got a neat little china cup out of the counter store, and filled it with pennies. Another one was pretty nearly filled with nickels. Then I carried along a handful of dimes and gave them to Mrs. Root for her new year's present. It is a little late in the day, but never mind. She appreciated the gift. They are to be kept in mamma's bureau drawer, and every one of the household will know where to get them for Sunday-school and church, or to pay little bills. Do you say, "Brother Root, it may be easy for you to keep a dishful of coin of the realm in that way in your house, but we can not do it in our home"? Wait a bit. There was recently an estimate in one of the dailies, to the effect that more than five millions of dollars was paid out for holiday presents; and the statement was made that at least half of that amount was for things that people did not want or need. Now, instead of giving your wife a set of silver spoons,* a book, or even a new dress, give her an assortment of pennies, nickels, and dimes to make change with. You can put in some quarters if you choose, and then you see if it does not make her happy. At any rate, such an investment will not be like the silver spoons or book, for *it* can be used to pay debts with any time you choose; and I am sure it will save the dear wife many steps, and much worry and trouble, if you keep those little dishes of nickels and pennies constantly replenished. It need not cost you any more than it does not to have them—that is, if you have a good and prudent wife. Think it over, talk it over with your wife, and see if Uncle Amos has not struck a good thing. By the way, it gave my heart a throb of joy when Mrs. Root and I decided that it would be perfectly safe for every one of our household, even the children and grandchildren, to have access, without any necessity of lock and key over the pennies and nickels. If a tramp breaks in and finds them we shall be that much out; and under some circumstances it may be best to have this little arrangement under lock and key.

Your letter of the 13th inst., with two queens, arrived here on the 21st. Queens are in first-class order, and appear to be a fine breed. We presume by their color that they are daughters of imported mothers. Economy being the order of the day here, we took the comb honey out of the cages and invited two friends to dine on American comb honey.

JAMAICA BEE-SUPPLY CO.
Mandeville, Jamaica, W. I., Oct. 23.

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*I really think this one paper is worth the price of his journal for one year; and, by the way, Ernest reminds me that whoever sends us a whole dollar for GLEANINGS, and does not ask for another premium, may have the *Busy Bee* one year free of charge. But you must mention it when you send your dollar.

*I once offended a good friend of mine because I objected to selling him a set of silver spoons for his wife, when I knew he had not paid a grocery bill, which I feared he never would pay.

HIGH PRESSURE GARDENING

GARDENING FOR JANUARY.

Of course, in the North all gardening must be under glass. The sun is now day by day stepping northward, and it is a real enjoyment for me to watch the spot where it goes down every night when we have a clear sunset, and note the daily progress toward summer time. We are now using 135 sashes with whole glass, and about 25 made of glass slats. The slats are about 2 inches wide, and are placed from 1/16 to ⅛ inch apart. These small openings are completely closed when the weather is frosty. As soon as we have a thaw they are open, which gives the plants air, and such sashes work all right without any handling for very hardy stuff such as strawberries, spinach, cold-frame cabbage-plants, onions, etc. It does not answer so well with lettuce, unless some additional covering is put on when we have very severe weather. Just now we have arranged our beds so that every fourth or fifth sash is slatted, and it works beautifully, especially while the sun is so far to the south. The sashes are never moved at all unless it is to give them water when we have a summer rain. The greater part of our beds are cold; but where we have steam heat underneath, as I have many times explained, every thing moves on splendidly. Our Earliest and Darling strawberries are already budded to blossom.

We did not have very much sunshine this winter till the new year came in; but since then we have had almost as many bright days as cloudy ones, and every thing begins to respond accordingly. One of our hotbeds is shaded from the winter blasts by evergreens; and when there is a bright sunshine over in this protected nook, I enjoy working among the strawberries, right in the month of January, as much as I ever enjoyed gardening in April or May. Of course, things have to be watched, and they must be lovingly kept in mind. I have sometimes thought it made things grow just to look at them often, especially when these loving looks are coupled with thanks from the heart to the great God above, from whom all blessings flow. These new potatoes in the greenhouse are now, some of them, six inches high, and we are thinking about making cuttings of some of them.

LATE-PLANTED POTATOES BETTER FOR SEED THAN THOSE PLANTED EARLY—WHY?

We clip the following from a recent number of the *Field, Farm, and Fireside*:

> Repeated observation shows that a tuber that has not reached full maturity will retain its moisture, and for many months continue as firm and as solid as when dug, under conditions where a ripe one will not. Such a potato often, on being cut for seed, will crack ahead of the knife, it is so brittle, and the juice will run from it as from a newly dug tuber. It is in just the condition to give its sprouts the necessary amount of moisture to start a strong, thrifty plant, suited to produce a bountiful crop.
>
> The fully ripened tuber, on the other hand, has already passed the prime of life, and is on the decline, as soon as wilted. Its sprouts have not the necessary vitality to give them a proper start in life, any more than have the offspring of aged animals, or the buds of a shrunken currant-cutting.
>
> It is a well-established fact in animal husbandry, that the offspring of animals that have only reached the full flush of maturity are much thriftier than those of animals that have begun to go down the decline of life.

Our experiments for years past have satisfied us that, at least in our locality, late-planted potatoes produce better seed than those planted so early that they come to full maturity. Yes, where the tops are, many of them, killed by the frost, such potatoes when dug will keep in the spring without sprouting, much better than the early grown, or potatoes that reach full size and maturity. Our crop of seed potatoes in our cellar is nearly all the product of potatoes planted the last of June or the fore part of July. For prices, see our new catalog.

SOME OF THE SMALL FRUITS RECENTLY ADVERTISED.

Mr. Root:—I am interested in new fruits, and have been trying some. I have had the strawberry-raspberry for two years. It will soon spread all over the garden. It commenced to blossom about the first of July, and blossomed till frost came. I never saw a berry of any kind on it. We had all kinds of weather in that time—plenty of rain, hot weather, and dry weather. The Mayberry won't even stand the first frost. The Logan berry had two or three berries on this year. I think if it would stand the winters it might raise a few berries. The wineberry I have had three years, and last winter I covered it all, root and branch. A few canes lived over winter. They blossomed; and when the blossoms fell off they closed up in a wine-colored burr. I waited a good while to see them open, but not a berry did I see. I dug in to see what was in the burr, and it looked just the same as when it closed up. The Rocky Mountain cherry is not what it is advertised to be. It is worse than what we call our choke-cherries here.

The Bismarck apple is advertised a great deal in catalogs. Now, I should like to know if you know any thing about it—whether it is like the other new fruits or not. I have another new fruit which they call the evergreen blackberry. It was brought from Germany some years ago, and planted in Oregon, and is now sold by the Des Moines Nursery Co., Iowa. I paid $2.50 for one plant. I have not had many berries yet. It doesn't seem to be hardy. They commenced to ripen about the 10th of August, and kept up ripe berries and blossoms till frost. If you know any thing about this berry I should like to hear from you.

Wakefield, Neb., Nov. 26, 1897. R. CHINN.

Why, friend C., your report is a discouraging one indeed. Are you sure your locality is favorable for small fruits in general? Do you get good crops of the ordinary raspberries and blackberries? We have had a few strawberry-raspberries; and the Logan berry has also given us some nice luscious berries. We have had enough wineberries for a taste; but it has turned out a good deal as I have described them. You probably know of my report on the Rocky Mountain cherry. We received a box by mail, however, that were very much better than our own. In the absence of other fruit they might have been very fair for cooking, but certainly they would not compare with cherries that grow on trees, for eating out of the hand. We have one of the Bismarck apple-trees, and it blossomed and began to bear fruit when it was only about two feet high. The blight struck it, however, and killed it almost to the ground. But this could hardly be called a fault of the tree. I have never seen the Oregon evergreen blackberry; but I believe it is pronounced by competent authority as of "no account." Friend C., I would not, if I were you, ever again pay $2.50 for a single plant of *any* new fruit, no matter how much the catalogs boom it. Better stick to the good kinds that you find in your neighborhood. These would be pretty sure to succeed, while the new things are always *extremely* doubtful.

SPECIAL NOTICES FROM BUSINESS MANAGER

The third edition of 10,000 copies of Danzenbaker's book, "Facts about Bees," revised and up to date with new cuts, is now on the press, and will be ready for distribution the last of this month. It will be sent free with 2 cents to pay postage. See Danzenbaker's advertisement elsewhere.

CHOICE STRAWBERRIES.

It is a little out of season for strawberry-plants, but you will want to know where to get them when the time comes. We have printed for C. N. Flansburgh, of Leslie, Mich., a neat catalog which he will be pleased to mail to those who write for it. His ad't appears in this issue.

MAPLE SUGAR AND SYRUP.

We shall be prepared as usual to supply these products at low prices, as we are right in a good maple section. If you expect to buy any this spring it will pay you to send for our prices. We have on hand a little stock of '97 sugar which we offer as follows: No. 2 at 7c per lb; No. 3 at 6c; 50 lb. lots at ½c per lb. less. First-quality syrup at 90c per gal.

A NEW BINDER FOR GLEANINGS OR ANY OTHER PERIODICAL.

We take pleasure in saying that the Monitor binder, advertised in this issue, is not only the neatest and most convenient binder, but the cheapest thing we have ever seen or heard of. It is a real marvel of Yankee ingenuity. It costs only 12 cents for GLEANINGS, and yet it is about the handiest thing I ever saw for the purpose.

SEEDS FOR FARM AND GARDEN, FRESH AND TRUE TO NAME, AT PRICES LOWER THAN EVER BEFORE.

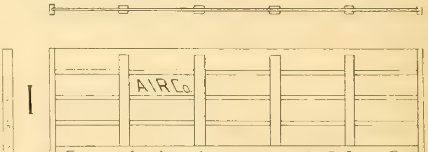
We can not just now in this issue give you the reduced prices, but any order you may send us will be made at these lower figures; and in our next issue we expect to give you a revised condensed list of prices. The seeds were grown by the same firm who supplied us last year. Their germinating qualities have already been tested in our greenhouse, and we shall be growing crops from them all through the season.

T TINS FOR 1898.

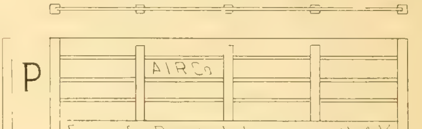
We have changed our T-tin machine so that the upright in the tin, as now made, is only ¼ inch high instead of $\frac{7}{16}$, as formerly. This is to accommodate the new T fences without cross-slotting them. To use with old-style T tins they must be cross-slotted, as shown in the diagram. In order to work freely we find that this groove must be at least $\frac{3}{16}$ of an inch wide or they are apt to bind on the T tins. The plain separators for use in T supers with the new T tins should be fully 3¾ inches wide, and from now on we will make them so unless otherwise ordered.

FENCE, OR CLEATED SEPARATOR.

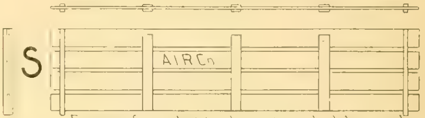
The above illustration will make the matter of fences more clear than any amount of description. By a careful study of the detail drawings, and reading-matter under each, you will get a better idea of these fences than you could in any other way except by seeing the samples themselves. The N Danzy fence is just like the O fence with cleats on one side only, and is used in connection with sections 1$\frac{17}{32}$ wide, with one plain side and one open-cornered slotted side. We do not recommend this arrangement. The spaces between the slats should not be over ⅛ of an inch; and as it is practically impossible to maintain that space absolutely accurate, and it is much safer to have the space less rather than more, we are now making the fences with a space of about ⅛ full so as to make sure it does not run over ⅛, and thereby produce ridgy or washboard honey.



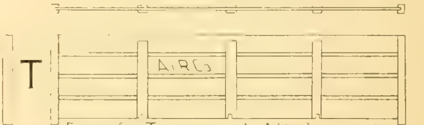
Fence for Ideal super with 3⅝ x 5 sections in deep super



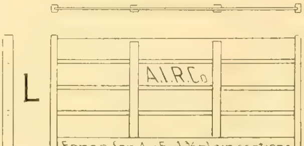
Fence for Dovetailed super with 4¼ x 4¼ plain sections



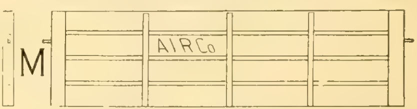
Fence for slotted section-holder with 4¼ plain sections



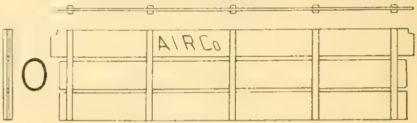
Fence for T super with 4¼ plain section



Fence for 4x5x1⅜ plain sections crosswise in eight-frame deep super



Danz fence for 4x5x1⅜ plain sections with Danz Hive

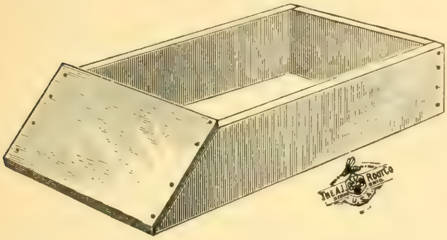


Fence for 4x5x1⅜ plain sections with '97 style of Danz Section Holders.

OUR 1898 CATALOG.

As we go to press with this issue of GLEANINGS we are just finishing the last page of matter for our 1898 catalog, and within a week after this number is mailed we expect to begin mailing catalogs. Our various dealers are waiting for a supply, and it will take some twenty to twenty-five thousand to furnish them. Our own list numbers about one hundred thousand names, and it will take us some weeks to print and make enough catalogs to go around. The first we have to send will go to our GLEANINGS readers, so that you will receive one just as soon as we can furnish it, without writing for it. If you don't get one before Feb. 1st, you may conclude it has gone astray.

We will mention briefly some of the additions and changes you may look for. The matter of hives has been almost entirely rewritten, incorporating the new fences and plain sections and Ideal super, together with the old styles heretofore furnished. You have your option of the three at the same price.



We offer an improved hive-stand, with slanting front, forming a wide alighting-board, which will be included with any of our hives, for 5 cents each extra—a very nominal price for something so valuable and indispensable as this is. The prices of hives in lots of 10 and 20 are slightly reduced, notwithstanding the improvements added. Prices of Danz. hives are also marked down a little, although the new fences cost more to furnish than the old style. The Dov. chaff hive has been improved by the addition of a wide hinged and removable alighting-board and deep entrance. Two new options in brood-frames are offered, both of which will be favorites with some customers.

The Hubbard section-press is improved, and made more easily adjustable for different sizes of sections. Cowan honey-extractors have been improved at various points. A brake has been added to the four and six frame machines, which will be found a great convenience in stopping the reel. The list price of these two machines has been marked down $2.00, the price now being $18.00 and $24.00 respectively.

As the Abbott and Bingham honey-knives as now made are exactly alike we have dropped the Abbott entirely, and will sell all as Bingham knives.

An important addition to the list of valuable accessories to the apiary is the Tinker zinc; and in this connection I call attention to two errors which occurred in the first catalogs run off the press. Our electrotypers, by some mistake, got the cuts reversed, so that "Tinker zinc" appears under the cut of "Root zinc," and "Root zinc" under the cut of "Tinker zinc." The cuts were all right when we sent the forms to be electrotyped, and we did not discover the alteration till about ten thousand were run off the press, when we changed it. Another error makes the width of zinc strips, both Root and Tinker, ¼ inch instead of ¾ inch, as it should be, and the length reads 18x19⅛ instead of 18 to 19⅛. Entrance-guards and Alley traps are now made of Tinker zinc, which provides better ventilation. The entrance-guards have been increased in size to 2 inches square, and the price advanced to 10 cents each, 80c for 10.

Shipping-cases have been changed somewhat, and several new sizes added to accommodate the plain sections as well as the 4x5 and 3⅝x5.

Prices on several of our standard honey-packages, both glass and tin, have been considerably reduced. The price of the A B C of Bee Culture has been changed to $1 20 postpaid, or an even dollar when sent with other goods by express or freight at your expense. Three of our rural books have also been reduced in price 10 cents each.

CONVENTION NOTICE.

The Ontario Co Bee-keepers' Association will hold its ninth annual convention at Canandaigua, N. Y., Jan. 27, 28, 1898. An interesting program is in course of preparation. All are invited.

RUTH E. TAYLOR, Sec.

The Vermont Bee-keepers' Association will convene at the Van Ness House, Burlington, Jan. 26 and 27, 1898. M. F. CRAM, Sec.

West Brookfield, Vt.

KIND WORDS FROM OUR CUSTOMERS.

Please don't curtail the editorial department of GLEANINGS. This is always much the best part.

Hyde Park, N. Y., Dec. 10. A. T. COOK.

Inclosed find 14 cts. in stamps, for which please send one pair smoked spectacles to me. I think the two pairs I got just as good as I had paid $1.50 a pair for here at our local jeweler's.

Malvern, Iowa, Oct. 29. MRS. ANNIE F. WING.

STRAWBERRY-PLANTS TO JAMAICA.

The Warfield strawberry-plants arrived in good order, and have had a good rain on them since they were planted. Bees are booming now on "Christmas pop" and other honey-plants, and prospects are very good for a heavy yield of logwood honey, which is our best crop in these parts. H. G. BURNET.

Linstead, Ja., W. I., Nov. 22.

THE WATER-MOTOR AND DYNAMO.

These, mentioned on page 860, will not run a lamp large enough to light a room. The lamps that go with this outfit are at the most only two-candle power, or about the same as the lamp you describe on the same page as used on your bicycle. I write this for fear some of the readers of GLEANINGS may be misled by the favorable notice you give this outfit.

Scranton, Pa., Dec. 8. L. F. HIORNS.

[Even if all you say be true, friend H., I am rejoiced to see so much of a success for such a small amount of money. With a greater fall of water, or by using a larger quantity per hour, I presume the same machine, or a similar one, would work an eight-candle-power lamp. Many thanks for your report, nevertheless.—A. I. R]

"LORD, HELP!"

The prayer which always puts Bro. Root's heart in tune.

"Lord, help!" That is my favorite prayer
In times of trouble and of care.
I may not all the wants disclose;
But these my loving Father knows;
But help I need, and up to heaven
I lift my prayer, and help is given.

"Lord, help!" In sickness, pain, or grief,
That little prayer will bring relief
I may not kneel, or clasp my hands,
Or bow my head—God understands;
He sees and knows my pain or grief,
And helps to bear or gives relief.

"Lord, help!" Wherever should I be
Were I not helped, O Lord, by thee?
Whatever should I do, could I
Not send my secret wish on high,
And know the answer would be given
Right to my soul from God in heaven?

Dear Bro. Root:—I read from the pulpit last Sunday morning the extract from your comment on my poem, and then read the above verses, suggesting that they always use Bro. Root's prayer.

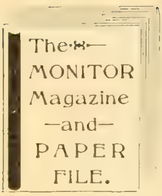
REV. J. POLLOCK HUTCHINSON.

Ann Arbor, Mich.

Catalog Free. A. I. Root Co.'s Goods
for Missouri and other points, to be had from
JNO. NEBEL & SON, HIGH HILL, MO.

CALIFORNIA. Mountain bee-ranch for sale. Good location; telephone connection with three railroad stations.
D. O. BAILIFF, Banning, Cal.
In writing, mention GLEANINGS.

Home for Sale—a Home in California.
On account of almost total loss of eyesight I am compelled to offer my fruit-ranch and apiary for sale or exchange. For further particulars address
E. B. BEECHER, Auburn, Placer Co., Cal.
In writing to advertisers mention GLEANINGS.



Binds securely and neatly magazines, papers, pamphlets, etc. Each new number filed quickly and easily. One will hold a year's numbers of GLEANINGS. Strong, handsome, light, and simple. All sizes urnished. Prices: 12 inches and under, 12 cents; over 12 inches, 1 cent per inch. Postage 3 cents per file extra. Order from

S. C. WATTS,
Clearfield, Pa.

In writing mention GLEANINGS.

Prosperity.

It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
FREMONT, - - - MICHIGAN.

In writing advertisers, mention GLEANINGS.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

In writing mention GLEANINGS.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

Cash for beeswax.

M. H. HUNT,
Bell Branch, Mich.

No cheap Queens to sell; but the best.

Golden 5 band, or 3 band from imported mother. Untested, 75 cts.; tested, $1.00.

L. BEAUCHAMP, Box 613 San Antonio, Texas.

In writing advertisers mention GLEANINGS.

FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by

Emerson T. Abbott, St. Joseph, Mo.

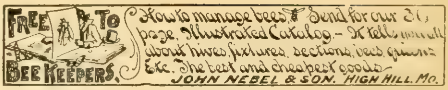
Write for *free sample copy now.*

CASH FOR BEESWAX.

We pay 25c per lb. cash, or 27c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 30c for *best selected wax*. *Old combs will not be accepted under any consideration.*

Unless you put your name *on the box*, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by *express*.

THE A. I. ROOT COMPANY,


FREE TO BEE KEEPERS.

How to manage bees. Send for our 36 page, Illustrated Catalog.— It tells you all about hives, fixtures, sections, bees, queens Etc. The best and cheapest goods—
JOHN NEBEL & SON. HIGH HILL, MO.

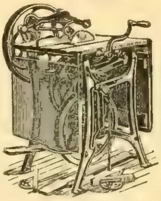
In writing advertisers mention GLEANINGS.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.

In writing advertisers mention GLEANINGS.

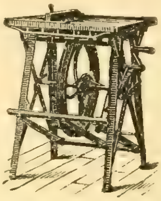


One Man with the
UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei

Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

In writing, mention GLEANINGS.



Read what J. I. PARENT, of Charlton, N. Y., says — "We cut with one of your combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalog and price list free. Address W. F. & JOHN BARNES, 545 Ruby Street, Rockford, Ill.

When more convenient, orders for Barnes' Foot-power Machinery may be sent to

THE A. I. ROOT CO., Medina, O.

In writing advertisers, mention GLEANINGS.

Rootville Wheels Cheap.

ONE $75.00 AJAX.

Gent's wheel, belonging to E. R. Root; long cranks, pneumatic saddle, large tires, 70 gear, cycloidal sprockets, finished in blue; very easy running; as good as new, nearly. $30.00.

ONE COLUMBUS, $75 MODEL.

Belonging to J. T. Calvert, 6¾-inch cranks, large tubing, flush joints, divisible cranks, cycloidal sprockets; ridden but little. $30.00.

ONE $50 LADIES' AJAX.

Belonging to Miss Constance Root; as good as new; ridden scarcely more than 10 miles. $25.00.

ONE $100 CLEVELAND.

Belonging to A. I. Root—the easiest-running wheel, he says, he ever owned; wood reversible bars, clincher tires, keyless cranks, large tubing, flush joints; in fine running order. $42.50.

ONE $150 COMBINATION TANDEM.

Belonging to E. R. Root, made by the Remington Arms Co.; ridden but little, not over 50 miles all told, and almost new; long cranks, wood handle-bars, large tubing, long reinforced drop forgings; in fact, the strongest and most rigid tandem ever built, for only $65.00.

The Rootville folks always buy the latest bicycles every season; and, desiring to be strictly up to date with all the latest improvements, we offer our wheels cheap. If you want one of these bargains, speak soon. Catalogs and fuller particulars given on application.

THE A. I. ROOT CO., Medina, Ohio.

OUR TREES etc. advertise themselves. **The best always cheapest.** Can supply all your wants from **Flower and Vegetable Seeds to Street Trees** at low rates. We publish one of the **leading Seed, Plant and Tree Catalogues issued** which we mail **free.** Try us, our stock and prices will please you. Can refer you to customers in every state and territory in the Union. 43 years of square dealing has made us patrons and friends far and near. Have hundreds of car-loads of

FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS, ETC.

We send by mail postpaid Seeds. Plants, Bulbs, Roses, Small Trees, etc., safe arrival and satisfaction guaranteed, larger by express or freight. 44th year. 32 greenhouses. 1000 acres.

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ARE RELIABLE.

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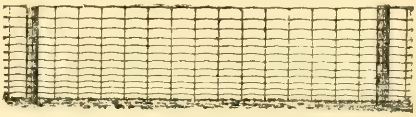

The Locomotive Engineer

must have an eye out for signals. One need not watch the thermometer on account of his Page Fence. Rain or shine, fever heat or zero weather, "the coil is in it," and keeps it tight.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

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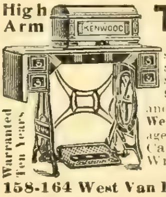

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$60 Kenwood Machine for $23.00
$50 Arlington Machine for $19.50
Singers (Made by us) **$8, $11.50, $15** and 27 other styles. **All attachments FREE**
We pay freight. Buy from factory. Save agents large profits. **Over 100,000 in use.** Catalogue and testimonials **FREE.** Write at once. **Address (in full),**

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WANTED.—To exchange amber and dark comb honey, at 6c per lb., for shipping-cases or offers.
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WANTED.—To exchange "Yaggi's Geographical Study;" cost $40.00, for incubator, or offers.
E. E. SLINGERLAND, Troy, Pa.

WANTED.—To exchange no-drip shipping-cases and bee-hives, for buckwheat extracted honey.
J. M. KINZIE, Rochester, Oakland Co., Mich.

WANTED.—Extracted honey, incubator, shotgun, watch, for strawberry-plants and golden Italian queens.
J. F MICHAEL, Greenville, O.

WANTED.—To exchange for bronze turkeys, or offers, two wild-turkey gobblers, tamed.
S. S. MILLER, Elklick, Pa.

WANTED.—A second-hand green-bone cutter, in good order. Send description of what you have, and price.
Box 120, Medina, Ohio.

WANTED.—To exchange pair of St. Hubert man-trailing blood-hounds, butcher tools, foundation-mill, and bone-mill, for bee-hives in flat or Italian bees.
ELIAS FOX, Hillsboro, Wis.

WANTED.—Second-hand machinery for manufacturing cheese-box heading; also cheese-box-nailing machine. Must be in good repair, and cheap for cash. Address
C. & H., Box 117, Spring Green, Sauk Co., Wis.

WANTED.—To exchange, one A. I. Root's make, of one-piece section machine, in good condition, for honey or offers.
WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—To exchange rifles and foundation-mills for incubator.
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To all new subscribers, and also to those who renew before their subscriptions expire, and inclose $1.00, we will send the *Busy Bee*, a monthly bee-paper, in addition, free.

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CABLE STAY FENCE CO
16 to 24 cts. Per Rod.
$10 For a machine to build the cheapest strongest and best fence made of wire. No royalties, no farm rights, machine easily and quickly operated by any farmer.
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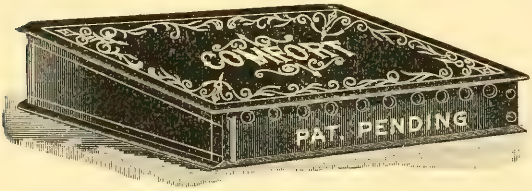
LOWER PRICES ON

COMFORT FOOT AND HAND STOVES.



Winter's cold is at hand again, and with it the necessity of providing means to keep warm. Among the many devices for this purpose the *Comfort* foot-stoves, with *smokeless* and *odorless* fuel, fill a long-felt want, and are invaluable for liverymen, milk-peddlers, mail-carriers, and all others who have to take long drives in very cold weather. It is likewise a great comfort in a cold corner of the home or office to place one of these under the feet; for if you can keep your feet warm you feel more amiable and comfortable. One stove in a window will keep plants from freezing in the coldest weather. It would likewise be an excellent thing in the bee-cellar in extreme cold weather. Its new fuel is made in the form of sticks, one end of which is lighted and put into the stove where it will burn 8 hours or less, as the operator desires. The hand-stove is a small metal box covered with velvet, about an inch thick and 4 inches square, with sliding cover, and slightly oval, to fit on the curves of the face or body. It is used in the place of a rubber hot-water bottle in applying heat in cases of neuralgia, earache, bowel complaint, and such ailments. As it gives an unvarying heat for over two hours from one charge of fuel, it is readily seen to be far superior to a hot-water bottle. Many physicians who have tried it are greatly pleased with it. The foot-stoves are made in two sizes, for one and two sticks of fuel.

Hand-stoves, including 2 dozen fuel	$ 35 each.
Small foot-stove, including 25 sticks of fuel (wt. 7 lbs.)	1 25 "
Large " " 25 " " " 8 "	1 35 "

Fuel for hand-stove, 20c for 2 doz.; $1.00 per gross. Fuel for foot-stove, 75c per box of 50 sticks. Hand-stove with fuel, mailed for 10c extra.

THE A. I. ROOT CO., Medina, Ohio.

BETTER THAN KLONDIKE GOLD, $3.60 FOR $1.

N. Y. Weekly Tribune, greatest 20-page newspaper in U. S.	$1.00
Young People's Weekly, religious, colors, 12 pages, size Youth's Companion	.60
Farm Journal, best 24 page farm paper; most popular in the United States	.50
Poultry Keeper, 20 pages, printed in colors. It leads; others follow	.50
P. K. illustrator No. 1, 100 illustrations, poultry-houses, incubators, brooders, etc	.25
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P. K. illustrator No. 3, poultry diseases, gapes, roup, cholera, moulting, etc	.25
P. K. illustrator No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $1 we will send these 4 papers one year and 4 books, postpaid, grand total	$3.60

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

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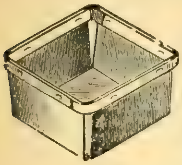

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Bee-keepers' Supplies.

We allow a **Liberal discount** on early orders. Why not send for your supplies now to save the discount and avoid the rush of the busy season? Catalogue and price list free. Address

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The Live Stock Journal,

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The Live Stock Journal, Chicago, Ill.
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486, 488 & 490 Canal St., Corner Watts St., N. Y

Honey and Beeswax.

Liberal Advances Made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

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105 PARK PLACE,
NEW YORK,

keeps in stock a full line of popular

APIARIAN SUPPLIES,

which are first-quality, both in material and workmanship.

Celebrated Wisconsin Basswood Sections, Dadants' Foundation.

HONEY-JARS, 1-lb., square, with corks, $4.50 a gross; discount on quantity.

Catalog free, giving discount for early orders.

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QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.

W. H. LAWS, Lavaca, Seb. Co., Ark.

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For Sale—A LOT OF FINE HIVES OF BEES, with good queens, in 8 frame hives or shipping-cases. Price each, $3.50.

JOHN A. THORNTON, Lima, Ill.

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INCUBATORS AND BROODERS.
THE WORLD'S LEADERS.
Our Stock of Poultry Supplies the BEST.
Catalogs on application.
HENRY A. DREER, 714 Chestnut St., Phil., Pa.

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HATCH THOUSANDS
WITH THE PRAIRIE STATE
INCUBATOR
200 FIRST PREMIUMS.
PRAIRIE STATE INC. CO.
SEND FOR CATALOGUE. HOMER CITY, PA.

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HATCH Chickens BY STEAM—
With the MODEL
EXCELSIOR Incubator

Simple, Perfect, Self-Regulating. Thousands in successful operation. **Lowest priced first-class Hatcher made.**

Circulars free. Send 6c. for Illus. Catalogue.

GEO. H. STAHL.
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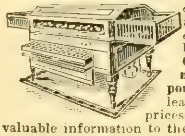

THE WHOLE STORY

of successful incubating and brooding chicks is told in our new 225 page catalogue. Full description of the best machines to use for the purpose Cuts and instructions for building **modern, economical poultry houses; poultry supplies** and cuts and prices on leading varieties of **pedigree poultry;** prices on **eggs for hatching,** etc. Full of valuable information to the man or woman **who keeps hens.** We send it to any address on receipt of 10 cents.

RELIABLE INCUBATOR & BROODER CO., Quincy, Ill.

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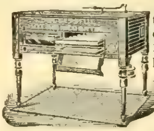

THE SUCCESSFUL INCUBATOR

is the standard machine for hatching strong, healthy chicks. Self-regulating, patent turning trays, drying room for chicks, non-explosive lamp—just a few of its good points. Sold under positive guarantee to work perfectly. Beautifully made and durable. Our 128 page catalogue describes them fully; tells many things about poultry raising you should know. Mailed for 6 cts.

DES MOINES INC. CO. Box 503 DES MOINES, IA.

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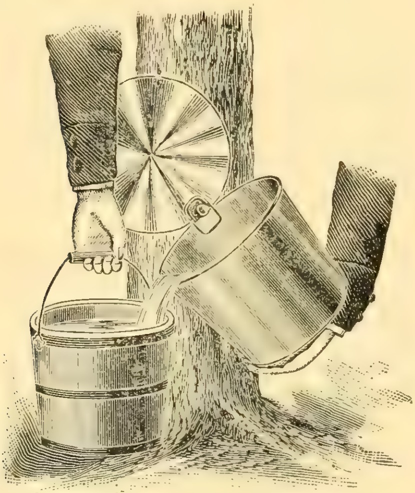
POULTRY-RAISERS AND ALL, $6.00 FOR $2.50

Christian Herald, printed in colors, largest and best religious weekly in the world	$1.50
American Agriculturist, best 28-page illustrated farm and market weekly	1.00
Am. Agriculturist Year-book and Almanac, over 600 pages, worth	1.00
New York Weekly Tribune, best 20-page newspaper in the United States	1.00
Poultry Keeper, 20 pages, printed in colors. It leads, others follow	.50
P. K. illustrator, No. 1, 100 illustrations, poultry-houses, incubators, brooders, etc	.25
P. K. illustrator, No. 2, 75 illustrations, artificial incubation, care of chicks, etc	.25
P. K. illustrator, No. 3, poultry diseases, gapes, roup, cholera, moulting, etc	.25
P. K. illustrator, No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $2.50 we will send these 4 great papers 1 year, and the five books, grand total	$6.00

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

Maple-Sugar Supplies.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10 or more. We do not sell evaporators, but think we can do you some good on spouts, pails, covers and, cans. Our tin pails and cans are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by buying carload quantities we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.

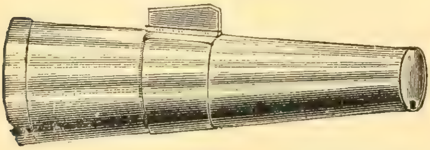


BUCKET WITH HINGED TIN COVER.

This cut shows the manner of hanging the bucket on the spout, and also the manner of emptying with the hinged tin cover. Most progressive sugar-makers nowadays use covers of some kind.

Record hinged tin covers................	$5 00 per 100.
Reversible woodcovers..................	3 50 per 100.

RECORD SAP-SPOUT.

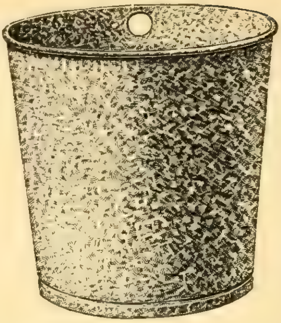


This spout is cheaper than any other made.and we believe it is as good as any, if not better., It is used almost exclusively in this section. Price $1.00 per 100.

TIN SAP-BUCKETS.

Grade of tin. Price per 100.	10-qt.	12-qt.	15-qt.
IC charcoal sap-buckets...	$13 50	$14 50	$17 50
IX charcoal sap-buckets	15 50	16 50	18 00
IC coke-tin sap-pails............	12 00	13 00	15 00
IX " " "	14 00	15 00	17 00

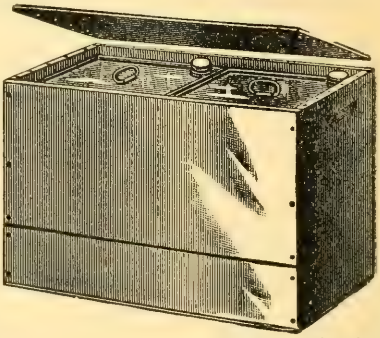
The sap-pails in above table, of coke-tin, are offered to compete with other cheap buckets you will find in the market. The tin in these cheap pails is just the same as in the better ones, except the coating, which is much thinner. We guarantee these equal or superior to the other cheap buckets in the market, but recommend, instead, the higher-priced ones with better coating; or, better yet, the galvanized. All the galvanized buckets, as well as the 10-qt. tin ones, have holes punched like cut below, while other tin buckets have wire loops.

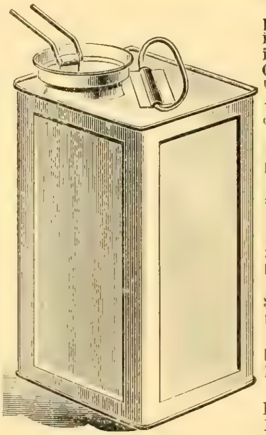


We are offering special bargains this year in galvanized-iron buckets. These are by far the strongest and most durable bucket made. The blank steel is cut out and made up into pails, and then the whole is dipped into molten metal, and coated all over, inside and out. All seams are filled up so they can not leak, and rust has no chance to work on them anywhere. If you want any thing better than the I C tin, the galvanized bucket is the one to select. There is only one objection to them, as compared with tin. The surface is somewhat rougher than tin, and therefore they are not quite as easily cleaned. This is a slight objection as compared with the greater strength and durability of the pails.

Price, 10-qt. galv., $14.50 per 100; 12-qt., $16.00 per 100; 14-qt., $17.50 per 100.

ONE-GALLON SQUARE CANS.





This is the favorite package for syrup; being square, it will pack in the smallest space. Our cans this year all have the 2 inch, lever-seal cap as recently described, and shown in cut opposite. They are warranted not to leak, which is more than you can say of home-made cans.

Price, 1-gal. square cans, with lever seal, $9.00 per 100; 6 in a box, 80c per box; $7.50 for 10; 10 in a box, $1.25 per box; $11.50 for 10.

½-gal. cans, 2-inch, lever-seal cap, $7.50 per 100.

¼-gal. cans, 2-inch, lever-seal cap, $6.50 per 100.

FIVE-GALLON SQUARE CANS.

These are largely used for storing and shipping honey, and for that purpose there is nothing better. Many also use them for syrup, as they cost less per gallon. They are also furnished from Medina with 2-in., lever-seal cap, or 1½-in. screw cap as preferred.

PRICE LIST.

5-gal. cans, 20 in a box, @ 26, $5 20.
5-gal. cans, 2 in a box, 70 c; 10 boxes, $6.50.
5 gal. cans, 1 in a box, 45c; 10 boxes, $4.00.

The A. I. Root Company,
Medina, Ohio.

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Honey Column.

CITY MARKETS.

NEW YORK.—We have had a good trade on comb honey the past week. Fancy white is in demand. Our stock of fair and mixed honey is working down very well. Extracted honey is selling well. Fancy white clover and basswood find ready sale. We quote white comb honey, fancy, 11½@12½; fair grades, 9@10; buckwheat and mixed, 6½@7; extracted California white, 5@5½; amber, 4¾@5; white clover and basswood, 5¼@5½; buckwheat, 4@4½; southern, 50@55 cts. per gallon. Beeswax, 27@28c, finds ready sale.

FRANCIS H. LEGGETT & CO.,
Jan. 24. New York.

ST. LOUIS.—Comb honey, fancy white, 11½@12; A 1, white, 10½@11; No. 1, white, 10@10½; No. 2, white, 9@10; No. 3, white, 8@8½. Amber, 2 cts. less than white; dark, 2 cts. less than white. On the different grades of extracted honey, white, 5@5½; amber, 4¼@4¾; dark, 3@4. Beeswax, prime, 25@25½. The demand for honey is very light, and stocks in our city are large; movements slow.

WESTCOTT COM. CO.,
Jan. 19. St. Louis, Mo.

MILWAUKEE. — The demand for honey is not up to what we desire, yet we are hopeful it will come later on. The supply of comb is good, and quality very nice, and it seems it will all be wanted at fair values. We feel like trying to sustain values, yet not all who handle honey do so. However, we will continue to quote fancy 1-lb. sections, 11@12; A No. 1, 1-lb. sections, 11@11½; No. 1, 1-lb. sections, 10@11; No. 2, 1-lb. sections, 8@9; No. 1, dark, 8@9; extracted in bbls., kegs, and cans, white, 5½@6; extracted in bbls., kegs, and cans, dark, 5@5½. Beeswax, 25@28.

A. V. BISHOP & CO.,
Jan. 24. Milwaukee, Wis.

CINCINNATI.—Demand is slow for extracted and comb honey, with a good supply. We quote 10@13 as the range of prices for best white comb honey; 3½@6c for extracted honey, according to quality. There is a fair demand for beeswax at 25@27 for good to choice yellow; supply good.

CHAS. F. MUTH & SON,
Jan. 20. Cincinnati, O.

BOSTON.—Fancy in cartons, 12@13; fancy, in glass fronts, 11@12; A No. 1, 10@11; No. 1, 9; No. 2, 8; No. 3, no sale here. Beeswax, 27c, good demand. Light demand for honey, a good supply.

BLAKE, SCOTT & LEE,
Jan. 18. Boston, Mass.

MINNEAPOLIS.—We quote fancy white-clover comb, 11c; amber and dark accordingly. Market is very quiet, would not advise further shipments just now. Extracted, fancy white, 5½@5¾; some sales made at 6c; not much demand for dark extracted.

S. H. HALL & CO.,
Jan. 19. Minneapolis, Minn.

DENVER.—We can quote our market improving a little; still, it is not what it should be at this time of year. We are selling our best grade of comb honey in cartons at 11½c, and without cartons in glass-front cases at 10½c. Our best trade is on extracted honey, which is improving all the time, as our brand becomes known and is used. We can quote No. 1 extracted at 6c. Beeswax, 25c.

R. K. & J. C. FRISBEE,
Jan. 20. Lockbox 1014, Denver, Col.

ALBANY.—There is a better demand for comb honey, but prices not sustained. Clover is selling from 9@11, according to quality; and buckwheat and mixed, 6½@8. Ample stock on hand. Extracted is selling at 5@6 for white, and 4½@5 for dark.

CHAS. MCCULLOCH & CO.,
Jan 22. Albany, N. Y.

COLUMBUS. — Honey market at this writing is somewhat easier; with good grades of amber there is ready sale. While prices are no lower than last month, still to make any fair-sized sales concessions must be made. Fancy white comb, 13; A No. 1 white comb, 12; No. 1 white comb, 11; No. 2 white comb, 10; fancy amber, 8½; No. 1 amber, 8; No. 2 amber, 7; buckwheat, 7.

THE COLUMBUS COMMISSION & STORAGE CO.,
Jan. 21. 409–413 N. High St., Columbus, O.

KANSAS CITY. — Market is well supplied with comb and extracted. The demand is light. We quote fancy white, 1-lb. comb, 10@11; No. 1 white, 1-lb. comb, 10; amber, 1-lb. comb, 9@10; dark, 1-lb. comb, 8@9; extracted white, 5½@6; amber, 5@5½; dark, 4@4½. Beeswax, 20@22.

C. C. CLEMONS & CO.,
Jan. 20. Kansas City, Mo.

CHICAGO.—There is a little more trade in honey than during December, but no change in prices of any consequence. The receipts are about equal to sales. Beeswax continues in good demand,

R. A. BURNETT & CO.,
Jan. 18. 163 South Water St., Chicago, Ill.

CLEVELAND.—We quote selling as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6. Beeswax, 28.

A. B. WILLIAMS & CO.,
Jan. 19. 80-82 Broadway, Cleveland, Ohio.

DETROIT.—Fancy white comb honey not plentiful at 13 cts., and in small lots a little better. No. 1 white, 11@12; dark grades cheaper; fancy dark, 8@9; No. 1 dark, 7@8; light extracted, 5@6; dark, 4@5c, with slow sale. Beeswax is in good demand at 25@27.

Jan. 20. M. H. HUNT, Bell Branch, Mich.

SPRINGFIELD.—Our market to-day on A No. 1 white clover honey is 12c; No. 1 honey is 10; buckwheat, No. 1 dark honey, is 10c; No. 2, dark honey, 8@9c. Demand is fair, but not large.

Jan. 19. PERKINS & HATCH,
Springfield, Mass.

PHILADELPHIA. — The late arrivals of California comb honey have demoralized our market. Fancy comb, 10; No. 1 comb, 9; amber comb, 8; buckwheat, 7; extracted white, 5; extracted amber, 4½; extracted dark, 3¾. Beeswax, 28.

WM. A. SELSER,
Jan. 20. 10 Vine St., Philadelphia, Pa.

FOR SALE.—Extracted clover at 6 cents.

M. ISBELL, Norwich, N. Y.

FOR SALE.—Finest quality white-clover extracted honey, 6½ cts. a pound; heartsease honey, 4½ cts.; both kinds in 60-lb. cans, one in a case. Sample 10 cts.

R. & E. C. PORTER, Lewistown, Ill.

FOR SALE.—Cheap, 25 bbls of honey.

CHAS. DADANT & SON, Hamilton, Ill.

Revised Price List of Garden Seeds for Feb. 1.

Please notice that any or all seeds mentioned below are sold in five-cent packages, postpaid by mail. For 10 papers ordered at one time, 40 cts.; 100 papers, $3.50. Of course, scarce and high-priced seed will necessitate making only a very small amount of seed in a package; but by far the greater part of them contain a full half-ounce of good fresh seeds. By comparing these packages with those you get of many of the seedsmen you will notice the liberal amounts we furnish for only 5 cts. It is true, we do not give presents or cash prizes; but we believe the most intelligent people of the present day would prefer to have their money's worth of what they ordered, rather than compete for a prize. The five-cent packages are sent postpaid; but the price of all other seeds does not include postage; therefore, when you order seed by the ounce or pound, allow postage thus: 9 cts. per lb.; 5 cts per ½ lb., or 1 cent per oz. Peas and beans by the pint and quart must also have 8 cts. per pint or 15 cts. per quart; for corn, add 12 cts. per quart for postage. Postage to Canada is double the above rates. One-fourth ounce, pound, or peck, will be sold at ounce, pound, or peck rates unless otherwise specified. In the enumeration below, no description of the seeds is given, as you may notice. Our complete catalog, with full description, will be mailed on application if you have not already received it.

ASPARAGUS.

Asparagus, Palmetto. Oz. 5c; lb. 40c.

Asparagus Roots. 2 year old. Palmetto, 10 for 10c; 75c per 100; $6.00 per 1000 2 year-old roots not mailable. 1 year roots. 10, 10c; 100, 50c; 1000, $4. By mail, add 5c for 10; 25c for 100.

BUSH BEANS.

Kumerle's Bush Lima. Qt. 25c; ½ pk. 75c; pk. $1.25

Burpee's Bush Lima. Pt. 15c; qt. 25c; ½ pk. 75c; pk., $1.25; bu., $4.50

Henderson's Bush Lima. Pt. 10c; qt 18c; pk. $1.00; bu. $3.75.

Davis Wax Bean. Pt., 7c; qt., 12c; 4 qts., 40c; pk., 75c; bu., $2.50.

Best of All. Qt. 5c; peck, 40c.; bush., $1.25.

White Kidney, Large. Pt. 8c; qt. 15c; pk. 65c; bu. $2.25.

York State Marrow. The standard field bean. Qt. 10c; peck 65c; bu. $2.25.

Mills' Banner Bean. Qt. 15c; peck, 75c; bushel, $2.50.

Navy. Qt. 5c; pk. 35c; bu. $1.25.

POLE BEANS.

Extra-Early Lima Beans. Price, ½ pt., 8c; qt. 20c; peck $1.00.

King of the Garden Lima. ½ pt. 8c; qt. 20c; peck, $1.00.

All of our beans will be furnished in 5-cent packages; but where they are to go by mail, postpaid, of course the above packages will have to be quite small. If wanted by mail, add 8c per pt. or 15c per qt. for postage

BEETS.

Eclipse. Oz. 5c; lb. 20c; 5 lbs 75c.

Long Red Mangel. Oz., 5c; lb., 12c; 5 lbs., 55c; 10 lbs., $1.00, 20 lbs. or more, 9c per lb.

Golden Tankard Mangel. Oz., 5c; lb., 15c; 5 lbs., 70c; 10 lbs., $1.20; 20 lbs. or over, 10c per lb. Has yielded as high as 50 tons to the acre.

STANDARD SUGAR BEETS.

Lane's Imperial Sugar. Oz. 5c; lb. 15c; 5 lbs. 6 c; 10 lbs or more, 10c per lb.

French White Sugar Red-top. Same price as Lane.

Klein Wanzleben. Per lb. 20c; 5 lbs. 90c; 10 lbs., $1.50.

CABBAGE.

Select, Very Early Jersey Wakefield. *Stock seed.* Oz. 20c; lb. $2.50.

Henderson's Early Summer. Oz. 10c; lb. $1.00.

Fottler's Brunswick. Oz. 10c; lb. $1.00.

Burpee's Sure-head. Oz. 10c; lb. $1.10.

Excelsior Flat Dutch. Oz. 10c; lb. $1.00.

Perfection Drumhead Savoy. Oz. 10c; lb. $1.25.

Large Red Drumhead. Oz. 10c; lb. $1.25.

CARROTS.

Early French Forcing. Oz. 5c; lb. 40c.

Orange Danvers, Half-Long. Oz. 5c; lb. 35c; 5 lbs. $1.50.

CAULIFLOWER.

Henderson's Early Snowball. Raised by H. A. March. ⅛ oz. 25c; ¼ oz. 40c; oz. $1.50.

CELERY.

Henderson's White Plume. Oz., 10.; lb., $1.00.

Golden Self-Blanching Celery. Oz., 15c; lb., $1.50.

New Rose. Oz. 10c; lb. $1.00.

Giant Paschal. Oz. 10c; lb. $1.00.

Dwarf Golden Heart. Oz. 10c; lb. $1.00.

CORN (FOR TABLE USE).

Corn we sell at 5c per half-pint package; but at this price purchasers must pay the postage, which is 3c for each half-pint. If wanted in larger quantities the price (where no price is given) will be, pt., 7c; qt., 10c; pk., 50c; bu., $1.75.

Kendel's Early Giant Sweet Corn. ½ pt. 5c; qt 15c; peck, $1.00, bushel, $3.50.

Ford's Early Sweet.

Stowell's Evergreen.

Late Mammoth Sugar.

Country Gentleman, or **Improved Shoepeg.** Also called Zigzag.

Sweet Corn for fodder. Pk. 30c; bu. $1.00.

CORN SALAD.

Oz. 5c; lb. 40c.

CRESS.

Extra Curled, or Pepper Grass Oz. 5c; lb. 25c.

Water Cress, *true.* Oz. 25c; lb. $2.50.

Watercress-plants, strong and nicely rooted. Postpaid, by mail, 10 for 15c; 100, 50c.

CUCUMBER.

Early Frame. Oz. 5c; lb. 25c.

Improved Early White Spine, or **Arlington.** Oz. 5c; lb. 25c.

Green Prolific, or Boston Pickle. Oz 5c; lb. 25.

LETTUCE.

Grand Rapids Lettuce. Oz. 5c; pound, 50c; 5 lbs. $2.00.

Boston Market (or White-seeded Tennis-ball). Oz., 5c; lb., 50c.

Henderson's New York. Oz. 5c; lb. 50c.

MELONS, MUSK.

Casaba, or Persian Muskmelon. Oz. 5 cts.; lb. 25c.

Banana. Oz. 5c; lb. 25c.

Extra Early Citron. Oz. 5c; lb. 25c.

Emerald Gem. Oz 5c; lb 25c.

Miller's Cream, or Osage. Oz. 5c; lb. 25c.

MELONS, WATER.

Phinney's Early. Oz. 5c; lb. 25c.

Landreth's Boss. Oz. 5c; lb. 25c.

Sweetheart. Oz., 5c; lb., 25c.

ONION.

Yellow Globe Danvers. Oz. 5c; lb. 60c; 5 lbs. $2.50.

Large Red Wethersfield. The standard red onion. Oz. 5c; lb. 60c; 5 lbs., $2.50.

Prize Taker. Oz. 10c; lb. $1.00.

White Victoria. Oz. 20c; lb. $2.50.

American (Extra Early) Pearl. Oz. 25c; ½-lb. $1.50; lb. $2.50.

Extra Early Red. Oz. 8c; ¼ lb., 20c; lb. 65c.

ONION-SETS.

By mail 10 cents per quart extra.

Best Red or Yellow. Qt. 15c; pk. 75c; bush. $2 25.

Best White. Qt. 20; pk. 90c; bush $3.00.

Extra Early American Pearl. Qt. 20c; pk. $1.00 bush., $3 50. See American Pearl *seed.*

Prizetaker Same price as American Pearl.

Large size (called "Picklers") yellow; white, Am. Pearl, or Prizetaker, one-half above prices.

Winter, or Egyptian Onion Sets. Prices, 5c per qt., or 35c per peck; $1.00 per bush. From March until July we send *plants* of these instead of sets; price of plants, 15c per 100, or $1.00 per 1000; By mail, 10c extra per 100.

White Multiplier. Same price as Whittaker below.

Whittaker Onions. Large—qt., 10c; pk., 75c; bu., $2.50; small (sets)—qt., 18c; pk., $1 25; bu., $4.00.

PARSNIP.

Improved Guernsey Oz. 5c; lb. 20c; 10 lbs., $1.50. Fine grained, fine flavored, smooth. The best parsnip we have found yet.

PARSLEY.

Fine Curled or Double. Oz. 5c; lb. 35c.

PEAS.

Alaska. ½ pt., 5c; peck, 75c; bush., $2.50.

American Wonder. Qt. 15c; pk. $1.00; bu. 3.50.

Premium Gem. ½ pt. 5c; peck, 90c.; bu., $3 00.

Stratagem. ½ pt. 8c; qt. 20c; pk. $1.25; bu. $3 90.

Champion of England. Pint, 10c; pk. 75c; bushel, $2.50.

Canadian Field. Per pk., 35c; bu $1.25; 10 bu. $10 00.

Peas by mail will be at same rate as beans for postage.

PEPPERS.

Sweet Spanish. ¼ oz. 8c.; oz. 20c.

Bullnose. ¼ oz. 5c; oz. 12c.

Cayenne. ¼ oz. 8c; oz. 15c.

PUMPKIN.

Early Sugar. Oz. 5c; 30c. lb.

Field Pumpkin. Oz 5c; lb. 15c.

RHUBARB.

Myatt's Victoria. Oz., 5c; lb., 75c.

Roots, 10c each; 50c for 10; $3.50 per 100. Small roots postpaid by mail at above prices.

RADISHES.

Early Scarlet Globe. Pkt. 5c; oz. 5c; lb 40c.

Wood's Early Frame. Oz 5c; lb. 35c.

Beckert's Chartier. Oz. 5c.; lb. 30c.

Chinese Rose Winter. Oz. 5c; lb. 35c.

SALSIFY, OR OYSTER PLANT.

New Mammoth. From Sandwich Islands. Oz 8c; lb. 75c.

SPINACH.

Bloomsdale Extra Curled. Oz 5c; lb. 15c. 5 lbs. 60c; 10 lbs. $1 00.

SQUASH.

Giant Summer Crookneck. Oz. 5c; lb. 30c.

Hubbard. Oz. 5c; lb. 30c; 5 lbs. $1.25; 10 lbs. $2.25.

TOMATO.

Golden Queen. Pkt., 5c; oz., 15c; lb., $2.00.

Ignotum Tomato. ½ oz 8c; oz. 15c; lb. $1.50.

Livingston's Beauty. Oz. 10c; lb. $1.00.

Dwarf Champion. oz. 10c; lb. $1.00.

Livingston's New Stone Tomato. Oz. 10c; lb. $1.00. A very fine large tomato for main crop.

Fordhook Early. The best *early* good sized tomato we have tested. Oz. 35c; lb. $4.50.

Earliest-in-the-world Tomato. ⅛ oz., 15c; ¼ oz., 25c; ½ oz., 40c; oz., 75c.

Buckeye State. Oz., 10c; lb., $1.00.

Trophy Tomato. Oz. 10c; lb. 75.

Pear-Shaped Tomatoes. Oz. 20c; lb. $2.50.

TURNIP.

Extra-Early Turnips.

Yellow Aberdeen. Oz. 5c; lb. 25c.

White Egg. Oz 5c; lb. 25c.

Breadstone. Oz 5c; lb 30c.

Purple-top White-globe. Oz. 5c; lb. 25c; 5 lbs. $1.00.

SEED POTATOES.

NAME Varieties are in order as regards time of maturing; earliest first, next earliest second, and so on	1 lb. by mail	3 lbs. by mail	½ peck.	Peck.	½ bushel.	Busnel.	Barrel—11 pk.
White Bliss Triumph ...	$ 18	$ 40	$ 25	$ 40	$ 7	$ 1 25	$ 3 00
Bovee	3	75	4	75	1 25	2 00	5 00
E Thoro'bred, Maule's.	18	40	25	40	75	1 25	3 00
Early Ohio	18	40	25	40	75	1 25	3 00
Early Norther	18	40	25	40	75	1 25	3 00
Burpee's Extra Early ...	18	40	25	40	75	1 25	3 00
Freeman	18	40	25	4	7	1 25	3 00
New Queen	18	40	25	40	7	1 25	3 00
Monroe Seedling	15	25	20	35	6	1 00	2 50
Rural New-Yorker No. 2	15	35	20	35	6	1 00	2 50
Sir William	15	35	20	35	6	1 00	2 50
Carman No 1	18	40	2	40	7	1 25	3 00
Carman No. 3	18	40	25	40	7	1 25	3 00
Koshkonong..	15	35	20	3	60	1 00	2 50
Manum's Enormous ...	30	75	30	50	85	1 50	3 50
New Craig .	18	40	25	40	75	1 25	3 00

At the present writing we are completely sold out of all our seconds except Monroe Seedlings and Freemans. While they last they will be furnished for half price, $1.25 and $1.50 per barrel, and they are certainly a bargain at this low figure.

Burpee's Extra Early are sold out, both firsts and seconds.

THE A. I. ROOT CO., Medina, O.

Wants and Exchange Department.

WANTED.—To exchange "Yaggi's Geographical Study," cost $10.00, for incubator or offers.
E. E. SLINGERLAND, Troy, Pa.

WANTED.—Extracted honey, incubator, shotgun, watch, for strawberry-plants and golden Italian queens. J. F. MICHAEL, Greenville, O.

WANTED.—To exchange pair of St. Hubert man-trailing blood-hounds, butcher tools, foundation-mill, and bone-mill, for bee-hives in flat or Italian bees.
ELIAS FOX, Hillsboro, Wis.

WANTED.—To exchange one A. I. Root's make of one-piece section machine, in good condition, for honey or offers. WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—To exchange rifles and foundation-mills for incubator. W. S. AMMON, Reading, Pa.

WANTED.—Sections, smokers, queen and drone traps, etc., for small-fruit plants, grapevines, trees, and eggs for hatching, and multiplier onions.
DR. MARTIN, Mercersburg, Pa.

WANTED. — To exchange 1 (10-inch) Root's make foundation-mill, in good order, for beeswax or offers. Price $10.00.
R. H. SCHMIDT & CO., Sheboygan, Wis.

WANTED.—To exchange one trio of very fine White Wonder chicks of 1897 hatch for rifle, shotgun, or offers. J. L. MASON, 225 Summer street, Auburn, Me.

WANTED.—To exchange a fine Siberian bloodhound, partly trained, and a first-class watchdog; will take a good watch or a camera, or any thing useful. Send postage-stamp for reply.
DOCTOR COBEL, Oakwood, Ohio.

WANTED.—A few pair ferrets and male deer.
CHAS. MCCLAVE, New London, O.

WANTED.—Work in apiary by experienced man, 23; single, reference. Box 101, England, Pa.

WANTED.— A hand or power bone-mill, rifle, or shotgun, in exchange for foundation-mill.
W. S. AMMON, Reading, Pa.

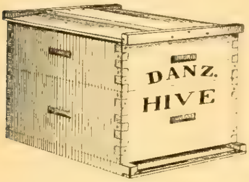
The Bee-keepers' Review

For January is really an old-time, special-topic issue on the no-bee-way, or plain section, and the "fence" separator. It gives the views of such men as Crane, Heddon, and Bingham. Mr. Aspinwall writes at length upon foundation, and particularly in regard to the new, no-wall style, and there is a fine picture of a super of partly filled sections in which the comb was built from this kind of foundation. The frontispiece is from a photograph of eight filled sections, four of which are of the old-style, and the others of the plain variety. It is an object-lesson that all can understand and appreciate.

Better send $1.00 for the REVIEW for 1898 and receive the December number free, or, if you prefer to see samples before sending your dollar, send ten cents for the December and January numbers; and if you then decide to subscribe, the ten cents that you have paid may apply on the subscription.

W. Z. HUTCHINSON, Flint, Mich.

In writing advertisers, mention Gleanings.



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Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,** or F. DANZENBAKER, Box 466, Washington, D. C.

In writing, mention Gleanings.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

Cash for beeswax. **M. H. HUNT, Bell Branch, Mich.**

Save Money and health by growing coffee for 1c a lb.; 300 Flowers free. See A. G. Cook's adv't, page 109.

Philadelphia Branch of

THE A. I. ROOT CO.,

10 Vine Street.

Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

Booking orders for Nuclei and Italian Bees for shipment. Write for prices.

In writing, mention Gleanings.

For Sale Cheap.—25 *sash*, 3 ft. 6 in. x 8 ft. x 2 in. thick; also about 1000 lights of 12 x 12 A glass.

J. S. WARNER, Medina, Ohio.

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PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

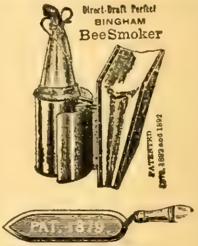
Smoke Engine (largest smoker made.)	4-inch	stove.	Doz. $13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	" 9.00;	"	1.10
Conqueror	3-in.	"	" 6.50;	"	1.00
Large	2½-in.	"	" 5.00;	"	.90
Plain	2-in.	"	" 4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	" 4.50;	"	.60
Honey-knife			" 6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

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Have you seen it? If not, send at once for a free sample copy. Here are the departments it contains.

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3. **Beedom Boiled Down.**—A new department, and a good one. Gives the *best*, or *cream*, of all the other bee-papers.
4. **Editorial Comments.**—Just what the name indicates.
5. **The Weekly Budget.**—Newsy notes and personal items.
6. **Questions and Answers.**—Here Dr. Miller draws on his nearly 40-years' experience, in answering the many questions propounded.
7. **General Items.**—A miscellaneous department of reports from bee-keepers, short items, etc.
8. **Question Box.**—Here 20 or more expert bee-keepers give their various opinions on a single question.

Well, what do you think of all that? Better send on $1.00 and take the Bee Journal this year any way. Back numbers sent from January 1. Address

GEO. W. YORK & CO., = = = 118 Michigan St., Chicago, Ill.

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ILLUSTRATED SEMI-MONTHLY
Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. FEB. 1, 1898. No. 3.

STRAY STRAWS FROM DR C. C. MILLER

I TAKE IT BACK, Mr. Editor. After reconsideration, I believe it's a good plan to have the veneers in shipping-cases.

THOSE CARAMELS I bragged about were made by the regular recipe in the honey-leaflet. If you want good caramels, take honey of good flavor, and then don't spoil the flavor by too much cooking.

PLAIN SECTIONS, according to L. A. Aspinwall, in *Review*, cost 20 per cent less than old style, save 20 per cent in shipping-cases, and he thinks 11 per cent less wood, besides greater beauty, makes quite an inducement to the purchaser.

DOOLITTLE puts sections in crate as fast as scraped. Hasty objects. "Not favorable to assorting." Hope they'll fight it out. The "assorter" of this "locality" says there's no time when you know so well the grade of a section as when you've just handled all sides in scraping.

DOOLITTLE says in *Progressive* that good colonies outdoors have brood in January, and none in cellar when set out in April. Why that difference? Does that paradox on p. 876 explain it—the colder the weather the warmer the *center* of the cluster? [I guess that is so, doctor.—ED.]

"POSSIBLY EATING so often of scrapings, in which honey is mixed with propolis, hastens the death of the honey relish" with bee-keepers, says Reviewer Hasty. I never knew bee-keepers did that. Isn't that a peculiarity of your "locality," Hasty? Explain, if you don't want to be cast out.

A MACHINE to clean sections has been a desideratum. The one invented by L. A. Aspinwall, and given in *Review*, may be just the thing. [There is no doubt that plain sections offer greater facilities for machine scraping than the old style; and I rather predict that, in time, every bee-keeper who produces from 2000 to 5000 pounds of comb honey or more can not afford to get along without a machine scraper. In another column we show the Aspinwall machine. I hope that, before the season is out, we shall be prepared to furnish small machines that can be sold at a nominal cost. We are already studying on the matter now. Just what style to adopt will depend upon circumstances.—ED.]

J. M. MITCHELL says, p. 53, that when a swarm is placed on the old stand, returning field bees unite with the swarm—just the thing we want in this region. Then the swarm will give more surplus than both together if field bees returned to old colony; and in the latter case the old colony might swarm again till very weak.

AMOS I. ROOT, you've struck a good thing, p. 62, in that dish regularly supplied with nickels and cents. Now let's have another place where the wife can always have a few dollars to do with just as she pleases, without asking any one. Now, can you furnish some pills or powders that will make a woman feel she has a right to such money without saving it by doing her own washing?

KEEP IT UP! I mean the good work of educating the public as to the real value of honey. Don't you be the least bit uneasy, Mr. Editor, for fear you harp too much on that string. [Thank you, doctor, for your encouragement; and I should like to know if our *other* readers are tired of having me harp on that string so much. It is my purpose to harp just long enough to secure the end desired, even if it does make some of my good friends a little tired.—ED.]

FOUL BROOD. R. L. Taylor says in *Review*, "The plan insisted on by some, that the colony be shaken out into still another hive after being allowed to build comb four days, I have proved in a hundred cases, without a single failure, to be entirely unnecessary." That stands good till contradicted; but it will take only one case of failure to knock over these hundred successes. If that one case doesn't come to the front, it will be a good thing to avoid unnecessary trouble.

LAST SEASON I had a wasp-nest built in a section like that picture on p. 49, only the section was beautifully completed, the honey built all around the nest. The nest was built on the foundation while it was off the hive (I've seen a number such), and I couldn't for a minute suppose that a wasp would commence or continue work in a section occupied by bees. [Why didn't you have a photo of it taken, doctor? I will say to our readers in general that I am always glad to get novelties of this sort. Any kind of freak is interesting, and in some cases they lead to a matter of scientific importance.—ED.]

A NICE THING it was for Mrs. Axtell to have a sociable time with those 20 women, p. 54; but when I read about it to a certain woman she said, "I can clean 1200 sections a day right straight along all alone, and not gash a section, and I don't believe I'd care to have the mess of 20 women, and get them their dinners, for the sake of getting 1500 done." I still think the sociable time was a good thing, but it might be best to separate the two things.

PLAIN SECTION is shorter and better than no-bee-way section. [We studied not a little on what name we should adopt for the new section. The "no-bee-way section" was a good explanatory name, and answered very well while we were introducing it. Finally Mr. Calvert suggested the "plain section." But it seems that Mr. L. A. Aspinwall, of Jackson, Mich., who has used these sections successfully, had also before us adopted the same name, and it must be it is right.—ED.]

I CAN'T SAY how much honey was saved, or how many swarms prevented, by blocking up hives—wish I could. At a rough guess I should say that it took away at least one-fourth of the desire to swarm, and that's a big thing. [I wish there were some way by which we could get at how much more honey and how many swarms could be saved; but I do not suppose it is possible to estimate any closer than you have given it. I believe your figures are conservative rather than otherwise.—ED.]

I CAN'T AGREE with you, Mr. Editor, when you say, p. 41, that staples "will not punch into the wood like a nail head." Just try if you can punch a flat nail-head into the wood as much as a staple. I like staples for end spacing, and I mean to try them for side spacing. But I like nails for side-spacing much better than I expected. They do not catch in the wire cloth, and they don't trouble half as much as I supposed about getting frames past each other. [I had forgotten, doctor, that your nails had heads on. Well, to get right down to it I do not suppose that either one will punch into the wood enough to make very much trouble. Of course, your nail-heads do not catch on wire cloth, because you have no use for an extractor, all your honey being comb.—ED.]

I'VE JUST TESTED one of the 1898 T tins mentioned on p. 64. With 10 lbs. weight it sagged ¼ inch. Please don't think of putting such a failure on the market. [In my own mind, doctor, you are a little too severe on the T tin in question. I can not, by any combination of figures, make out that the ordinary T tin is subjected to a strain of 10 lbs. in the middle. If you can make out more than 5, trot out your figures. Moreover, you forget that the T tin in question is to be used with the new fence; and that the plain sections and fence are keyed up solid. Why, the sections would almost stay in position without the T tins. In actual practice I doubt very much whether there would be very much more than about two or three pounds strain on the tin, under any circumstances.—ED.]

ACCORDING to Doolittle (and that's generally equivalent to saying according to the facts), long confinement is the real cause of all our wintering troubles, of course understanding that cold makes confinement worse. The disasters of the winter of 1882 came from the *long-continued* cold, three-fourths of all the bees in the United States being lost. Doolittle had 90 colonies on summer stands; they didn't fly for nearly 5½ months, and only 15 came through, and they wouldn't make three good colonies. He had 55 in a cave, and 53 came out strong.—*Progressive.* [That is a pretty good argument for the cave for such a winter and in his locality; but in our climate, with the average of winters the outdoor bees were ahead in strength and percentage of wintering.—ED.]

THE *American Bee Journal*, speaking of its department, "Beedom Boiled Down," says:

> The Boiler boils, and also stirs
> The stinging, seething mass;
> Then skims it oft, and still avers
> 'Tis yet but second-class.

This leaves one in doubt whether the Boiler lacks capacity to select the best from other journals, or whether he thinks no first-class material is to be found outside "The Old Reliable." Or was the trouble that "mass" and "second-*hand*" wouldn't rhyme? [Say, doctor, you tell that boiler to keep on "biling," whether the stuff in the boiler is first, second, or third class, or whether the material came from the "Old Reliable" or from some of the younger reliables.—ED.]

THAT $5.00 A DAY that you estimated for my last year's work, Mr. Editor, is not far out of the way; if any thing, it ought to be a shade higher. But I can't do that every year. [I draw an easier breath, doctor. I was afraid that you might tear my figures all to pieces, for you sometimes make fun of my arithmetic; but I am glad now if we have one really authentic case where, under favorable conditions, even as good as five dollars a day can be made by keeping bees. I once asked a mason how much he got a day.

"Three and a half, sir."

"Why, you ought to be pretty well off."

"I just barely make a living, sir."

"Why?"

"Because I do not average more than 150 days' work in a year. Give me two dollars a day the year round and I will jump quick at the chance."

Now, doctor, I do not know whether you are like the mason or not; but at $5.00 a day one could almost afford to lie off the rest of the year. But I suppose where the rub comes in in your case is that you can not make that five dollars a day, every year at least. But I believe one thing is certain—taking the years as they come, you can average better than your farmer neighbors around you. See what Mrs. Axtell says upon this point in this issue.—ED.]

GENERAL CORRESPONDENCE

NEIGHBOR GREENFIELD AND THE BEES.

Corrections; Peep-holes in Sections; Big Pumpkins; Acetylene Gas, etc.

BY S. A. NIVER.

Mr. Root:—When I arrived home from my trip collecting for the honey, GLEANINGS lay on the table, so of course I had to glance over that first, and several audible smiles were the result. Your memory is a little twisted on a few points—notably on neighbor Greenfield's struggle with "six sw'a'ms" in the air at once, and he bareheaded, barehanded, barefooted, etc. Now, the truth of that yarn is, "six sw'a'ms" on one limb—all in one funeral-pile—and Mr. G. encased in big boots, veil, gloves to his shoulders, and perspiration and profanity too numerous to mention, dancing a regular can-can with his old dishpan, trying to get them spread around into six hives.

True enough, he ordinarily goes among his bees rather *bare* in respect to head, hands, and feet; but they were too savage for even him that day. Poor old chap! his buckwheat honey sold for 8 cents, and clover for 9; and, after deducting expenses, 7 and 8 cents is just about the story.

You say in editorials, "Will he now tell us something about collecting? Does he go at his poor pays rough shod?" Well, no; not a poor pay to talk about this year. Three failures in four years, and amounting to only $25 loss, seems to me to be a very lucky record. But you may remember that my fighting weight is 120 lbs. (18 ounces to the pound), and so it behooves me to "go slow" about this "rough-shod" style. I have extended time to some customers, and been very careful to make them feel free to ask for extra favors. The result is that I have a very friendly lot of customers who express themselves as well pleased all around, not only with the honey, but especially with the style of package—non-drip cases with veneers — and there comes in an answer to one of Dr. Miller's objections to the no-bee-way section. The veneers hold them apart just right to get a grip on them with the finger and thumb nails. Careful selling is a great help to easy collecting.

One point I did find *new* to me, and it has bothered me ever since. Three of my old customers were captured by a New York drummer who sold them extracted honey for baking honey-cakes. The odd part of it all was that they should pay him 2½ to 3 cts. per lb. more than I had asked them for the last lot I sold them (which had given perfect satisfaction, better than the other fellow's honey), and the reason they gave for thus throwing away money, in one case nearly $30, was that it was too much trouble to look up our address and order by mail. Wouldn't that make you tired? I have been studying on some unique sign or advertisement to hang up in that man's bakery so that he will have our address always before his eyes. How would a queen-bee, about the size of a Christmas turkey, holding our card, do?

Well, Ernest, this chat is running on at a 2:20 gait, and I haven't touched on bicycles, acetylene, big pumpkins, nor those holes in the corners of Morton's honey. Say — don't put that point *too* strong in booming your new fence. There are peep-holes in *every box* of honey Morton has ever produced. Look at those he shipped you to Medina. Danzenbaker had *one* section with nary a peep-hole — the only one *I* ever saw. To be sure, the fence helps to reduce the *size* of 'em, but they are *there* all the same.

I must send A. I. a few seeds from a large pumpkin I struck down among the Pennsylvania Dutch. It weighed 135 lbs.; and the odd thing about this variety is its *keeping* qualities, and its fine flavor for pies. I saw one of them in a restaurant window, which had been there *three years*, so the proprietor solemnly declared; and Jake Daub (one of my customers) told me that he could vouch for its being there *two* years, but I would have to take the man's word for the odd year.

I called on D. N. Long, of La Salle, N. Y., and had a half-day chat over that new gas, and I am full of the idea of going to Los Angeles to go into the business. Mr. Long says he thinks the calcium carbide can be manufactured for *fifteen* dollars per ton.

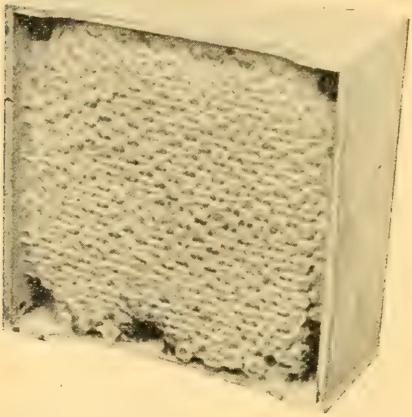
How on earth *can* old bee-keepers differ so widely in their opinion of the merits of the identical things used in the apiary? That great and trusted authority, Dr. C. C. Miller, jacks you up sharply about your section-holder, and puffs his T super. I have never had much experience in using T supers, and perhaps we are all *off* in regard to them; but this I *will* stick to—from what little experience I have had with them I think they are the meanest, most measly old truck I ever had any thing to do with. Perhaps it is but fair to Dr. Miller to say that all the experience I ever had with the T super was in smashing Morton's old ones to build a fire under the boiler.

Groton, N. Y.

[When I read your letter through, friend N., of course an audible smile came from my face — if there is such a thing as an *audible* grin. I think I must have felt like the culprit before the judge when the latter turned to him and said, "Thirty days and costs."

Really, friend Niver, you must not be too hard on my memory. You know I do not claim too great things for it; but I do insist that you told me that neighbor Greenfield worked among his bees bareheaded, barehanded, barefooted, and I kind o' got the impression that it was on this particular occasion that he was thus rigged out. However, I am almost glad that I did get things a little mixed, for I do not think anybody else could have described the situation quite so vividly as you have done.

Now about those peep-holes. Look here, friend N., I am not going to give up quite so easily, although I may have to back down a little bit. You may remember that the fence we are making and putting out is not quite the same thing as the fence that I saw when at the home of our mutual friend Mr. Morton. The cross-cleats of our fence drop down a bee-space from the top edge of the sections, and the top slat runs nearly to the top of the section. The cleats in Mr. Morton's fence are as long as the sections, and the top slat drops down a bee-space, or nearly that. You see, the conditions are exactly reversed. Mr. Danzenbaker and others who had been using the fence decided that it was an advantage to have the cross-cleats drop down a little bit, so that the bees could pass from one section to another without the necessity of having so many peep-holes or corner holes in the sections; and when I made the statement you refer to I had in mind a fence such as we were sending out.



SECTION OF COMB HONEY SHOWING CORNER HOLES.

You speak of peep-holes, and refer me to the samples of sections that you sent here. Not one of them has corner holes like those I was describing; but I will grant that they have peep-holes—that is, wee little holes made by one or two cells without any base between them, and just barely large enough for a bee or two to crawl through The general impression one would get in looking over Morton's honey is that it had no corner holes, because such holes as they do have are so small in comparison with the holes found in the ordinary 4¼ two-bee-way sections. Now, to give you a better idea of what I mean I show you herewith a picture of an ordinary 4¼ section of honey. At each of the four corners there are big holes almost large enough to run one's little finger through, and these holes are rounded off. In the case of the ordinary one-piece section the openings are of such a character as to favor the construction of such holes. Mr. Danzenbaker showed me quite a lot of his honey produced with his fence; and while I admit there were peep-holes, they were not the great big holes which are shown in the view above.

But read the last paragraph of W. D. Soper's article just following. The Aspinwall separator permits the bees to pass freely from one section to another in much the same way as our fence does. I may have borne down too strongly on the point, but I know there is *something* in it.

Regarding acetylene gas, let me caution you to be a little careful. One of the factories in Jersey City, where the calcium carbide was made, and where, indeed, the proprietors claimed there was no possible danger of explosion, had a most terrific blow-up on the 24th of December, demolishing the works, destroying life, and damaging considerable property in the vicinity. After the disaster the company essayed to locate in New York city, but the authorities refused to allow them in the city.

The calcium carbide looks like innocent stuff; but if water gets on to it in a room or basement, there will be a terrible explosion the moment a lighted lamp is brought near it. The very explosiveness* of the agent is just the very thing to make it valuable to run gas-engines where coal is expensive.

I do not mean to say that acetylene gas can never be used for domestic lighting; but it is at present one of those dangerous explosives for which we need to have a certain degree of respectful fear.

Big pumpkins—well, I am sorry to say I do not know any thing about them.

Regarding T supers, that's right — give Dr. Miller fits. But the good doctor insists that he has tried other forms, and does not like any other nearly as well as the T super. Why, he says he can not afford to use any thing else, because it consumes too much time.—ED.]

* * *

SOME KINKS IN SELLING HONEY.

How to Get the Trade, and How to Hold it; Aspinwall's Comb Honey in Plain Sections; "No Holes in the Corners at all."

BY W. D. SOPER.

I see in GLEANINGS you wish honey-dealers or jobbers to tell their experience in selling and collecting without loss. Of course, my experience is different from Niver's, as the most I sell is in my home market, a city of 25,000 inhabitants. Selling comb honey is different from extracted, in this way: It is a staple. The storekeeper knows he can sell comb honey; but extracted he doesn't know about. I go at it this way: I use mostly quart pails. These I pay 38 cts. per doz. for. I make pail and honey weigh just 3 lbs. This I wholesale at 20 cts., and retail at 25. I go around to the stores and put in four to six for them to sell, telling them if they don't sell I'll take them back. Well, I don't have to take any back. I make my rounds once a week; by this time they have them sold. They pay for the last left, and I leave some more. In this way the storekeeper has no risk to run nor money tied up in it.

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*We had an order for calcium carbide for foreign shipment, but the steamship on which the goods (bee-hive stuff) were to go refused to carry the carbide. —ED.

I am now using some of Muth's honey-jars. I leave them the same way. Always use a nice attractive label with your name on. I also use one reading like this:

"The honey contained in this package is absolutely pure, and complies with the pure-food laws of Michigan."

This has lots to do with satisfying the people that it is pure.

Well, you will ask, "Do you sell much?"

The answer is, "Yes, I am now on my 7000 lot." Do I lose any poor accounts? No. If there is a storekeeper who gets hard up, and owes me, and can't pay, I take groceries, as my family can always use them. If a storekeeper says he would like some comb honey, and hasn't the cash that day, I always leave what he wants. If you have had any experience, such men are not very particular about the quality. When I can I leave them some No. 2 honey to sell out. In this way I get rid of all that comes to me. I never crowd any one for my pay—give all the time needed.

Well, you will say this takes capital. Yes, it does in a town like Jackson. About $300 will do. If you produce the honey, then you don't need any. As I produce very little, I have to buy my supply. I pay cash.

Now let me give you a point right here. If you start in to furnish your town, keep it up and see they all have honey in their stores. If you neglect this you will find some one else has been there with honey, and you are out. Always buy all the local honey offered you, paying whatever you can afford. In this way it keeps the honey off your market, and has a tendency to keep prices up.

I think the no-bee-way section is going to take the lead. Mr. Aspinwall, of Jackson, has 3000 lbs. in this kind of section. I tell you, it is worth seeing his honey. It is as square as a piece of plank, and no holes in corners at all. Put me down as one in favor of no-bee-way sections and fence separator.

Jackson, Mich., Dec. 23.

[Your last paragraph, friend Soper, is very opportune, for I am going to throw it right in the face of friend Niver, who, in referring to these same corner holes, says I must not "put that point too strong." By the way, I am going to ask friend Aspinwall to send us some photos of that same honey, and will have them reproduced in half-tone.—ED.]

"FACING" COMB HONEY.

To What Extent Does the Practice Exist? Is it True that Comb-Honey Producers are a Dishonest Set?

BY AARON SNYDER.

I have been buying and selling honey for many years, and can come to no other conclusion, after repeatedly seeing positive evidence, than that bee-keepers who produce comb honey (I will say nothing about extracted-honey producers), and crate and market the same, are dishonest. Let me tell you why I have come to this conclusion. Almost every case of comb honey I ever bought has been "faced"—that is, the outside row of sections, next the glass, was nicer than the rows in the middle of the case filled up with inferior quality, and that very act alone, done, too, by the producers themselves, has caused more mischief and done more to lower prices than all other evils combined as regards the standard of comb-honey production.

A few days ago I went into a store in this city to sell some extracted honey. The lady who manages the store used very plain language in telling me that all honey-men were frauds. I tried to convince her my honey was pure and all right, which it was; but she would not listen to me. She then called my attention to a case of comb honey she had lately bought, saying: "Just look at that case of honey over there on the counter;" and added that if we bee-keepers would cheat in comb honey we would cheat in extracted honey too, and gave me to understand she wished I would leave the store. This lady had bought what she supposed to be a case of nice honey. The outside rows of sections were very nice, but the middle ones were very inferior. She said she would never buy any more honey of that house, meaning commission man; but don't you see the commission man was not so very much to blame? Most likely he had never opened the case, supposing it was put up honestly, and *knowing* it should have been; and now don't you realize the whole blame rests on the man who crated the honey? He was dishonest. Grocers the world over are finding fault with us bee-keepers for putting up honey as we do. They call us frauds, dishonest, slick article, and the like. It is a shame we as a great army of men must be looked upon as frauds, humbugs, dead beats, etc.; but there is no one to blame but ourselves. We deserve just what we are getting, and shall, so long as we continue to practice fraud and deception in trying to pull the wool over our neighbors' eyes in order that we may get a few more cents than honestly belong to us, while, in fact, we are getting less and less all the time, just because honey-buyers can not trust us. It's on the same principle of the farmer putting up apples when he puts a few nice ones in the bottom of the barrel then fills it up about two-thirds with little ones, then tops it out with the very best. Don't you see? Then he laughs to himself to think how nicely he has cheated some one; but, instead, he has cheated himself.

I knew a farmer who several years ago had a lot of poor bog hay, and conceived the idea that he would bale it up in such a way that it would sell for first quality; so he engaged a man to "fix it up" by wrapping good hay all around the poor bog hay when baling it, putting the bogs entirely out of sight. This man shipped the hay to New York for sale, and in a few days had to pay a very nice sum as damages in order to avoid being arrested for fraud. It served him just right. He ruined his reputation as a man, and just so we bee keepers are ruining our reputations as men. Away with such kind of business!

I should like to mention one more case. Not long ago I drove out of town to a bee-keepers' place to buy some comb honey. I got a few cases picked out, then, looking up, saw a case up on a shelf that looked very nice, and asked if I could have that. He said, "No. That is some very nice sections I have assorted out to face up with." Now, brother bee-keepers, what do you think of this kind of business? I won't mention this man's name, but he lives eleven miles north of Kingston, N. Y.; and if he should see this in print it might do him good.

Kingston, N. Y.

[Mr. Snyder's arraignment of bee-keepers seems a little severe. I can not think that even a majority of our fraternity are guilty of some of the things that he so justly condemns. However that may be, I am afraid there is truth in much that he says — seldom smoke without some fire. It is certainly true that commision men are not entirely to blame for some of the difficulties that arise between them and bee-keepers.

It is easy — oh, so easy! — to face cases of comb honey. I do not think bee-keepers have any intention whatever of deceiving when they unconsciously, on seeing a nice box of honey, put it next to the glass. They do not put it there because they wish to convey the impression that all the honey which shows is of that character, *but* because the honey is beautiful, and they wish to put it where its *beauty* can show. We have had several lots of comb honey shipped us lately from different bee-keepers from widely separated localities, but I do not think there was any evidence of "facing" any of the lots that were sent to us.

If bee-keepers are guilty of this one sin they are no worse than farmers. A year or so ago I was in one of our large commission houses when a carload of apples was received and opened. As a lid was lifted off I remarked, "My! what beauties!"

"Oh! they will not look like that all the way down," said the clerk, with a smile.

"Why not?" said I.

"Because they never are," he replied.

"But don't your customers soon learn that, and find fault?"

"Not a bit. They *expect* it."

"I do not see how that can be," I said "If I were buying apples that stood in front of your store, I should want to know how they would run *clear through* the barrel; and I should expect the *center* of the barrel to average with the *top*."

"You do not understand," said the clerk. "Our customers chiefly are grocers, or at least those who buy to sell again. They *want* their barrels faced."

I did not say any thing further; but upon a moment's reflection I made up my mind that some one somewhere at the end of the route made "a kick" at such a species of dishonesty, or that even the consumer had learned to expect (because he had to) that the apples in the center of the barrel he buys are poorer than those at the top, or "facing," by about 25 or 50 per cent.

I wonder if it is possible that commission men *expect* to have their cases of comb honey faced. I wonder, too if it is also possible that their customers, their grocery trade, also demand it. I can hardly credit it, for the great majority of comb-honey buyers pull out a section or two at random, and by these *random sections* the valuation of the honey is gauged, rather than by the "facing" behind the glass.

It seems to me it would do no harm to have this subject aired out a little. If we bee-keepers are culpable, let's hold up our hands, and confess. If we are not, then let us know the exact condition of things, both from the commission man's standpoint and that of the bee-keeper. It is a sort of family affair, you know, and we might just as well talk plainly among ourselves if the talk will result in good, as I have every reason to believe it will.—ED.]

NIVER'S GRADING-RULES.

No White Clover for Next Season; California vs. Wisconsin as a Bee Country.

BY HARRY LATHROP.

I should like to say a word in favor of the grading-rules used by Mr. Niver, illustrated on page 844. I have graded my comb honey that way for several years, and find it very satisfactory. The bulk of the crop will be sold as "No. 1," or "fancy," according to the skill of the bee-keeper, favorable seasons, etc. The price of No. 1 should be understood to be the highest that could be paid for *honey*. The higher price paid for fancy is given for looks, No. 1 being every bit as good *for use*. No. 2 is the lowest grade that should be placed upon the market. There is a demand, as Mr. Niver says, for each of these grades in any color, if we explain the different ones with the price of each. A good many dealers like to have at least two grades on hand. I have no trouble in closing out my No. 2 at a price about 2 cents per lb. less than I get for No. 1.

This season I have got 8 cts. for No. 2 white, 10 to 11 for No. 1, and 12 for fancy in lots. My yield the past season was about 80 lbs. comb honey per colony, spring count. The best individual colony finished up 10 supers, or about 250 lbs., in 1-lb. sections. I prophesy no clover honey on this field next season; but we may get a crop from basswood, which failed in 1897. Why not from clover? Well, the plants were two years old, and all went to seed. They will die. Weather has been too dry to germinate more seed. But this county is well seeded, and a wet spring or fall sometimes will bring it up, and then look out for another big crop. It won't be in 1898, though. Many people do not understand that it takes two years to make a good crop of honey from white clover. After a big lot of seed has germinated during a wet season it is the *second* year of the plant that it produces the honey. The plants that gave us our big crop here this year came up in the spring of 1896. Some of them bloomed, but there was no yield of honey from them the first year.

A short time ago I received a letter from my friend C. A. Hatch, now a bee-keeper in California. I had asked him to tell me whether he would rather keep bees in Southern California than in Wisconsin. I will give you his reply. "Yes, I would rather keep bees here than in Wisconsin—no winter here to kill off half your bees, but plenty of foul brood and every other bee-disease heard of." I am glad to know there is nothing worse against Wisconsin than the wintering problem. Some of us have solved that—at least I would rather some one would tell me how to dispose of overstock to good advantage than to tell me how to winter bees in this climate, without loss.

Browntown, Wis., Jan. 7.

[It would be interesting to know what the prospects are for clovers in other localities. I think it is safe to assume, however, that we shall not have as good a yield from this source as last season. The drouth last fall, in some sections at least, seemed to kill it down ; but with the amount of rain and mud we have in Northern Ohio it seems as if there could be no drouth anywhere else ; and yet the Californians say that, owing to a lack of rain. they do not expect very much of a honey crop next season; so perhaps it is just as well, friend L., that you are in Wisconsin, with its horrible winters, and not in California with its drouth and foul brood; yet I notice friend Hatch says he would rather live there.—Ed.]

MANUM'S EXPERIENCE IN THE EARLY DAYS.

His First Bee-smoker ; That Smoker-hook.

BY A. E. MANUM.

Early that spring I learned that a bee-paper was published in New York, called the *Bee-keepers' Magazine.* I at once subscribed for it, and also ordered King's "Bee-keeper's Text-book." Armed with this and Quinby's "Mysteries of Bee-keeping" I succeeded that season in making eight artificial colonies, with much satisfaction over my success. I bought six colonies of a neighbor, and took up four in the woods where bee-hunters cut bee-trees for the honey. With these and the original two I went into winter quarters with twenty, and came out in the spring with four weak ones. This was my *first* and *last* experience in wintering in the cellar.

This severe loss did not in the least check my enthusiasm, though I decided to "go slow" in the matter of making rapid increase. I began to open my eyes to the necessity of having strong colonies at the beginning of winter; and ever since, when I have followed this rule of having strong colonies in the fall, my bees have wintered well.

My second winter found me with 16 strong colonies, which were left on their summer stands, well protected by an outer case, where they wintered to my entire satisfaction.

The season of 1873 opened favorably. My bees were strong, and the honey-flow was very good. I doubled my number of colonies, and secured over 300 lbs. of honey in 4-lb. boxes, which were then the modern improved boxes. This honey was sent to Boston, where it netted me 33⅓ cts. per lb. Up to this season I had never heard of or seen a bee-smoker, but had controlled my bees by blowing smoke on them from a burning roll of cotton or a piece of rotten wood. Some time in May, 1873, while blowing smoke into the entrance of a hive, and while in the act of drawing a long breath for the purpose of blowing a strong "blast," I drew in a bee which stung my palate. Well, you may well imagine I scampered for the house, somewhat excited, and called for liquor. Wife (half scared to death at my appearance) brought me a 4-oz. phial nearly full of brandy, which I drank at once. She declared it would make me drunk. But I told her I'd rather be drunk than dead. However, I soon got over the "scare," as the injury proved slight.

I then decided that there should be something better than blowing smoke from a stick, for the use of the apiarist. I remembered that, when I was a small boy, my father had a small bellows for the purpose of blowing the fire in the old fireplace, and I wondered why something of that sort could not be used among the bees ; and in thinking the matter over, there developed in my mind a rude kind of smoker; but the question was, how to make the bellows. I went to a blacksmith's shop and examined a bellows, and there got the principle, and at once constructed my first bee-smoker. The bellows was very much as now made ; but the barrel, or fire-box, was blunt at both ends, with a small tube projecting from near the upper end from which the smoke issued. I also fastened a *hook* to the bellows for the purpose of hanging the smoker on the hive when not in use.

I will here say that of late there has appeared in Gleanings an *improvement* on smokers, invented, as would appear, by Mr. Coggshall ; but let me tell you, Mr. Editor, that I first used a hook in 1873, and have ever since. Young Mr. Boomhower, spoken of in Gleanings, got the idea of a hook from his father, who, in turn, got the idea and experience of using a hook on a smoker while in my employ in 1882 ; and you, Mr. Ernest, spoke of the convenience of such a hook as you saw on my smoker while visiting me nearly eight years ago.

In July, 1873, I heard of a *great bee-man*, as he was called—a man who knew all there was to be known about bees. This was Mr. J. E. Crane, who then lived in Bridport, Vt. I was very anxious to meet a modern bee-keeper, and consequently I visited him about July 20, and I assure you that visit was an agreeable one to me. Here I found a man who knew much more about bees than I did, or than I ever expected to know. I found Mr. Crane a very willing talker—not only very willing, but capable of imparting information on the subject of bee-keeping. After that, Mr. Crane and myself worked together, making many improvements in hives and fixtures. Mr. Crane was consulted as to the usefulness of many of my inventions before adopting or offering them to others. To-day, as then, Mr. Crane is one of the shining lights in apiculture. During the season of 1873 I bought my first Italian queens of Mr. W. W. Cary, who was then one of the leading queen-breeders of America.

To be continued.

[I had entirely forgotten about the hook I saw at your place when I visited you eight years ago; but since you refer to it I do remember it.—Ed.]

* * *

THE BUCKWHEAT FIELDS OF NEW YORK.

Bees Hanging Out Not Indicative of Swarming.

BY G. C. GREINER.

The editor, after making his New York trip through some of the buckwheat sections of the State, gave us in a former issue some very interesting notes on the subject. He spoke in a general way, perhaps as detailed as his flying trip would enable him to make the observations I am located right in the midst of one of those buckwheat sections. Every neighboring farmer grows anywhere from 5 to 20 acres or more every year. My own field of 8 acres almost joined the lower side of my apiary this past summer. Buckwheat honey forms a part of our honey crop every season, and occasionally it is all the surplus honey we have. It is thus that we are well acquainted with every thing connected with the plant.

One feature that may seem strange is the fact that it does not yield sufficient honey to induce bees to work in their supers until it arrives at quite an advanced stage of maturity. The fields may have reached their full growth; they may be white with blossoms ; bees may work on it in considerable numbers, yet no surplus honey is stored. Many times I have heard remarks like this: "Greiner's bees are stealing my buckwheat honey," or, "My buckwheat is alive with Greiner's bees," and so on, but not a colony would be at work in its super. After a little we would notice the buckwheat scent in or near the apiary. It would grow stronger from day to day, until all at once all colonies would be doing their best in sections.

Another point is this: It secretes honey only during the middle of the day; at least, bees do not work on it very much early in the morning nor in the latter part of the day. In this, buckwheat is very different from basswood. When the latter is in its full flow, bees hardly stop when night sets in; they seem to be busy gathering honey until after dark, and ready to work again with the first break of day. Not so with buckwheat. The apiary is comparatively quiet in the morning and afternoon, the outdoor work being done through the middle of the day. We frequently notice at this time that bees hang out in large quantities in the afternoon, but not while they are gathering honey.

The editor claims, as repeatedly set forth in Gleanings, that "hanging out" is an acquired habit or notion which can and should be broken up by proper management. I could never see it in that light. I believe bees are compelled to hang out by prevailing conditions which we can not help, neither will this hanging-out impair our honey crop in the least. When honey can be gathered, the out-hanging part of the colony is not the field workers; we often see hives covered with bees when at the same time section-work is rapidly progressing. In very hot weather, when we have a complete honey-drouth, field bees may possibly join the outsiders; but at the time of a honey-flow field bees will not be idle. We could not make them stay at home, loafing about when nature gives them a chance to work.

My explanation of bees hanging out periodically in buckwheat time is this: In the morning, at this time of the year, it is generally cool enough so that all the bees can stay inside of their hives without being uncomfortable. When it begins to get warmer, toward noon, the field bees begin to leave the hive, so that, by the time the noon heat would be unbearable inside of the hive for all the bees, a good portion of the field bees are absent, giving more room for those that remain. At the same time the commotion of the workers going and coming causes a circulation of air, which produces a beneficial ventilation. But the buckwheat flow does not last very long. In the early afternoon it dries up again. The field bees gradually gather up and crowd the hive to its full capacity; then, if the afternoon is hot, the only comfortable place is outside of the hive, and hanging-out is the necessary consequence.

It was a rare treat to look into the pleasant faces of our pioneers and authorities on bee-keeping at the Buffalo convention. Such names as Root, Miller, Doolittle, Elwood, York, Mason, Hutchinson, Hetherington, and many others have long been household auxiliaries with our families; and to see these men face to face, hear them talk, and talk with them, was alone worth more than a trip to Buffalo.

Naples, N. Y.

[There is no doubt that hanging-out is caused by conditions you have explained. But I am sure some, and perhaps much, of the regular hanging out can be obviated by either large deep entrances, or by separating hive-body from bottom-board by four blocks, *a la* Doctor Miller. I have had colonies that would hang out and loaf—do nothing, in fact, until a larger entrance was given.—Ed.]

* * *

MOUNTAIN PASSES.

Getting Bees and Honey over Them ; Feats in Driving ; Bean Fields, and Some Interesting Facts Concerning Them.

BY M. H. MENDLESON.

Mr. Editor:—If you will allow me I wish to correct a number of mistakes made by Mr. C. A. Hatch in his two last articles in Gleanings; and as many new comers ("tenderfeet") are apt to form wrong ideas and conclusions regarding this grand country they are excusable, as the change in climatic conditions of *one season* have serious effects upon the imagination.

Many will bear me out, that it is impossible to give positive, practical information about this country, its advantages, disadvantages, resources, etc., in one season's experience. No doubt Mr. H. has been conscientious in his statements; but such statements are apt to lead to wrong impressions and doubt upon the writings of the experienced.

Mr. H. must excuse me, for I do not wish to reflect in any manner upon his integrity. Mr. H., wild buckwheat honey is amber instead of white, of fine flavor, and very thick. There are much less than half migratory bee-keepers.

My large moving-racks are not unwieldy upon the roads I moved on the past season; but I had new teamsters, who had had but very little experience with big teams on our roads. In fact, they had been used to two and four horse teams on level farm land. If Mr. H. had seen our worst roads that I have hauled over for years back, *then* he would say, "*I don't know.*" The inexperienced teamsters of this season, one of them, would say, "You drive; I am afraid;" and the other would say, "I tremble in my shoes," and on fair roads at that.

Mr. John Arnott, the able superintendent of the Newhall ranch, of 49,000 acres, was one of the best teamsters of this State in times past, when he was in practice, and may be as good now. He drove a 24-mule team, with a heavy load, over one of the worst passes in this State, where the curves were so short he could not see his leaders—this, too, on one of the most dangerous passes, where the least bad driving out of the track would land all hundreds of feet down, none living to tell the story; but these big teams are thoroughly trained to do their respective work. The two swingers, or horses ahead of the wheelers, are the most important on these short curves, being trained to jump the chain (leading from the wagon that they haul by) toward the bank of an outward curve, or from the bank in an inward curve, along these dangerous places, and that, too, if well trained, without a word from the driver, in many cases. These are the bad roads, where unwieldy wagon-loads have been hauled over, and where Mr. H. would say it was an impossibility, as he is extremely skeptical as to possibilities here. We also do not run any risks of quicksands; for when there are floods, then the roads in most cases are unfit to drive, or, rather, to haul over. Our floods are few and far between, and of short duration.

The main cause of the loss of ten colonies in moving was that my springs were of insufficient capacity for the proper play for rough chuck-holes. Since then I have had an extra set made to order—a six-ton set—a ton and a half more capacity than I generally carry. This will allow of the proper play.

Right here let me state that I would advise all who buy the Spaulding springs (the best in the market) to get from ¼ to ½ capacity more than they wish to carry, according to their roads—the large capacity on the roughest roads.

My successful way of hauling bees was to prepare them the same for comb as for extracted honey, as they are supposed to be strong in numbers (if properly manipulated), and lower story crowded with brood; and when in this condition a super is absolutely necessary. With proper management bees are stronger in good than in poor years. A screen at the entrance is not altogether necessary. I have had, many times, better success with mainly top ventilation. At the suggestion of Mr. Hatch I lay over during the day after the first night out, which is contrary to my successful practice, as all bee-men with practical experience know that, while on the move during the day (and otherwise), bees will keep nicely clustered, quiet, and easy, and no worry; but a number of hours' rest, with a strong light day, is what does the harm. With the proper manipulation with me, bees will be stronger in numbers after a honey-flow, for there should be an abundance of brood comb with good queens. In following migratory bee-keeping in this section, the super should be full of good worker comb free to the queen, and more solid brood and less honey will be in the brood-apartment, or lower story, and consequent force for business.

To return to moving. I have had teams heretofore that could trot along where the roads were good, starting in the evening at 10 or 11, and drive 34 miles, and get to bean-fields by 9 to 11 the next morning—10 to 12 hours' drive, including a feed and rest for team after midnight. The team should have a day or two of rest before making another trip. I have had, in the majority of movings, my hives filled with honey, and queens crowded, in six days from landing in the bean-fields.

In addition to Mr. Hatch's statement regarding the preparation for crop for beans, the soil is kept cultivated through the winter to keep down the weeds as much as possible, and to keep the surface mellow so as to retain the moisture. After each rain the cultivation is followed. After the rains are all over, this cultivation is continued until the surface is dry for about four inches down. This depth of dry soil keeps the sun from heating and evaporating the moisture underneath. From the last of April until about the 20th of May, planting is done. The late planting is preferred by many, for the soil is warmer, and the seed matures more rapidly with the warmer weather, and a good stand is the result. Now, should there come sufficient rain directly after the planting, there forms a crust, and the beans do not come through; in fact, they rot, and the planting has to be done over with additional labor and expense. This extra seed is a big item, for it takes from 25 to 80 lbs. to the acre, 40 lbs. being about the average for limas, and 10 lbs. and up for small beans. Limas are planted from 26 to 36 inches between rows, and 12 inches apart in the row. About the same preparation of soil is practiced for other crops, or crops that are planted after the rains are over, such as corn, beets, etc. Barley, wheat, oats, etc., are sown during

THE INDUSTRY OF BEAN-RAISING IN CALIFORNIA.

the fall and winter; and by the time the rains are over, the ground is pretty well shaded by the rapid growth.

About July 1st the beans are nearly in full bloom—that is, with favorable weather; but the past season was exceptional, consequently unfavorable. The above date is about the right time to have bees in the bean-fields, then I get the full flow of honey. In the majority of seasons bees gather honey late in August and the first part of September from this source. Sometimes a week or ten days detention by teams is a season lost. The honey seems to pour in, and in two or three days the tops of the frames resemble so many snowflakes, the bees filling every nook and corner with beautiful water-white honey that makes us look with wonder and admiration. As we do not have very hot weather near the coast, the sun does not get hot enough to dry out the nectar. This is a fact, and contrary to Mr. H.'s statement, and years of experience have proven the above; but if we have an east wind, then it checks the flow for the time being, if it is not prolonged. I have had only two failures of crops from this source, and one of these was only a partial failure.

Ventura, Cal.

[The above description of teamsters, and teaming over those rough mountain roads, makes my very fingers tingle as I think of the trip that Mrs. Root and I took over to the Ojai hot springs with friend Wilkin and his daughter. We had a high-spirited livery team, and one of them they said was sometimes a "kicker;" and Mrs. Root was greatly concerned, for she did not consider *me* an experienced driver. I studied the horses and the roads all the way out—about forty miles, if I recollect. There was so much to see around the springs that we did not get started back until it looked as if we might be overtaken by night in the mountain canyons; so I commenced letting the ponies gradually get up to what might look like reckless and dangerous driving to a tenderfoot. I had studied the vehicle as well as the horses, and knew about what it would stand. The horses probably understood the mountain roads better than I did, but I cautiously let them out. Mrs. Root admitted, after we got home safely, that I had driven over roads that looked at first sight almost impassible, and at a higher speed than she had hitherto supposed was possible by *anybody*. Since that time, when she questions my skill in horsemanship I remind her of the Ojai springs trip.

Our good friend Mendleson has given us a big secret in describing the way they grow their bean crop. The ground is cultivated and fined up a long while before the beans are planted; and, again, they find beans will germinate better without having any rain to make a crust for them to break through. I know this is important. The best crops I have ever grown were where I had broken the ground repeatedly before the seed was put in. If this last working, just before seeding, is done just *after* a shower, so the plants may be up before another shower comes, you will make a big start in getting a crop, and will probably secure a good stand. The *Ohio Farmer* said, years ago, "Always sow turnip seed just *after* a rain—never before." Turnips germinate so quickly they will be up before another shower catches them, probably. After they have two leaves unfolded, a shower will not harm them.

Along with the article, Mr. Mendleson sent three interesting photos which we reproduce herewith. Of the one shown at the top he says:

> L. W. Thomson's bean-ranch, the largest one in the world, at Ventura, Cal.

Of the middle one he writes:

> Thrashing beans on a side-hill west of Ventura—Ventura in the distance. The great bean-fields beyond Ventura, in the Santa Clara Valley. The white spot on the right is the surf on the Pacific Ocean.

Of the one at the bottom he writes:

> This patch of beans is in a growing walnut-orchard, the vines completely covering the ground.

We "tenderfoots" of the East little know on what on extensive scale agriculture and apiculture are carried on in the West. As to the former, the views shown herewith will give a fair conception.—A. I. R.]

* * *

PLAIN SECTIONS AND FENCES.

Another Who has Used and Likes Them.

BY O. E. NICHOLS.

I have been a bee-keeper in a small way for about ten years. At present I have 40 colonies; but what I don't know about the little fellows is of far greater magnitude than what I do know. For some years I have been an interested reader and student of GLEANINGS; have taken a lively interest in its descriptions, especially so in Straws. The topics in the last few numbers, in regard to separators or no separators; bee-ways or no bee-ways; fences, section-holders, and their necessary adjuncts, have been both interesting and amusing.

On starting with bees I took good advice, and made haste slowly. I have made no radical change in my methods or fixtures, nor do I see any good reason at present for doing so. In reading GLEANINGS I have felt at times that I was years behind as regards up-to-date methods; but the wind-up for this year leaves the impression that I have been ahead. I began with the ten-frame Langstroth, and still use that size of brood-chamber, although often narrowing down to six or seven frames during the honey-flow. I have for some years used, of my own make, what I call a double chaff hive, having chaff on all sides except front and top, and on top when packed for winter. The hive contains two ten-frame brood-chambers with a 1½-inch division-board between, with room above for three crates tiered, and the hinged cover closed, the crates each holding 28 4¼x4¼x1¾ sections, or 84 in all.

I use a plain section, inclosed on all four sides by a section-holder of same width; also a cleated separator. The separator-board is ⅛ in. thick; 3½ in. wide; end cleats are ⅛x⅝x5 in. long; inside cleats are ⅛x½x5 in. long, so that the section is protected from propolis everywhere except top and bottom edges, thus in a great measure preventing their being stuck up with it. By the way, we have a good supply of propolis every year. This plan gives a nice clean white section, with very little scraping. Sections filled out to within about ⅛ in. of the edge can be packed snug without danger. During a heavy flow there is a tendency to bulge a little at top and bottom. I anticipate the same difficulty with the slatted separator or fence at such times. I expect to try next season a few separators with the cleats, except the end ones, even with the edge of the board, that to be in two parts, with a ¼-in. space between, giving one bee-way through and also along both edges. I don't think I need paraffine paper to protect the sections.

I have never used a queen-excluder over the brood-chamber, for, except once in a great while, I have discovered no use for it.

Many may object to the extra trouble of separators and section-holders like mine. I think that separators and section-holders can be cleaned easier than sections can be scraped and sandpapered, and with less danger to the honey; and when compared with the present popular bee-space section taken from a crate without tops to section-holder, a bee-keeper of pride will never begrudge what little if any extra work or expense there may be.

Cincinnatus, N. Y., Dec. 28.

[If the slats to your fence came up nearly even with the top of the sections, as ours do, there would be no bulging at top as you speak of.—ED.]

* * *

THE PRODUCT OF THE BEE.

Frequent Reference to This in the Bible.

BY JOHN CHRYSOSTOM.

As an example of industrious habits the bee is more often referred to than any other of God's little creatures —"the busy bee—" it is always called. Indeed, man himself is frequently conjured to avoid idleness by imitating the useful occupations of the honey-bee. Nay, more — in Holy Scripture this little worker is more frequently mentioned with favor than any other insect. Again and again we notice allusions to honey, showing how highly it was appreciated as an article of food —a product that was as favorably regarded by princes as by paupers. For instance, in Ecclesiasticus 39:31 we find the following sentence: "The principal things necessary for the life of men are, water, fire, and iron; salt, milk, and bread of flour, and honey, and the cluster of the grape, and oil, and clothing."

In another place, when God wishes to make known some of the riches of the promised land, he speaks to the chosen people through the patriarchs and prophets, and says it is "a land flowing with milk and honey." From this statement we must readily infer that the men of that time knew the value of honey as an article of food, and that God was offering them a great inducement when he mentioned the abundance of that commodity. Indeed, it is stated that the manna which fell from heaven possessed the taste of honey, which may be regarded as the divine approval of this special product.

In the early days honey was considered a royal gift, and we see frequent mention of it among the presents brought to soften the hearts of kings and princes. When Jacob sent his sons a second time into Egypt to bring corn, and wishing to gain the good will of the governor, whom he did not then know to be his own child Joseph, he bade them "take of the best fruits of the land in your vessels, and carry down presents to the man, a little balm and honey," etc. (Genesis 43:11.) Then, too, it is related, I. Kings 14:3, that Jeroboam, wishing to consult the prophet Ahijah concerning the recovery of his sick son, sent his wife to intercede with gifts. "Take also with thee," said he, "ten loaves, and cracknels, and a pot of honey, and go to him; for he will tell thee what shall become of this child." In another chapter honey is named among the presents that the children of Ammon sent to king David and his followers when fleeing from his son Absalom. Besides, there is occasional allusion to bees and honey in Samson's love affair with the beautiful Philistine.

That God himself recognized a valuable food in the product of the bee, we have proof in the words of Isaiah. That prophet, speaking of the hour when the Eternal Word of God would come and assume our human nature, says (chap. 7:14–16), "Therefore the Lord himself shall give you a sign. Behold, a virgin shall conceive, and bear a son, and his name shall be called Emmanuel. He shall eat butter and honey, that he may know to refuse the evil and to choose the good." And, in the same chapter, verse 18–20, he prophesies: "And it shall come to pass in that day that the Lord shall hiss for the fly that is in the uttermost parts of the rivers of Egypt, and for the bee that is in the land of Assyria. And they shall come, and shall all of them rest in the torrents of the valleys, and in the holes of the rocks, and upon all places set with shrubs, and in all hollow places (verse 22); and for the abundance of milk he shall eat butter; for butter and honey shall every one eat that shall be left in the midst of the land." It would appear from the above that the Egyptians called the honey-bees flies, or at least that there were in the country honey-collecting flies.

According to St. Paul, if Christ be not risen from the dead, our faith is vain; and yet, in support of this fact it is recorded that Christ ate honey. St. Luke says, after the resurrection Jesus appeared to his disciples when they were assembled together, and, after wishing them "peace," and showing them his holy wounds, he left still more evidence of his being again in the flesh. "Have you here," said he, "any thing to eat? And they offered him a piece of broiled fish, and a honey-comb" (chap. 24:41–43).

Here we have many instances, taken from the words of inspired writers, which should strengthen our belief in the value of honey.

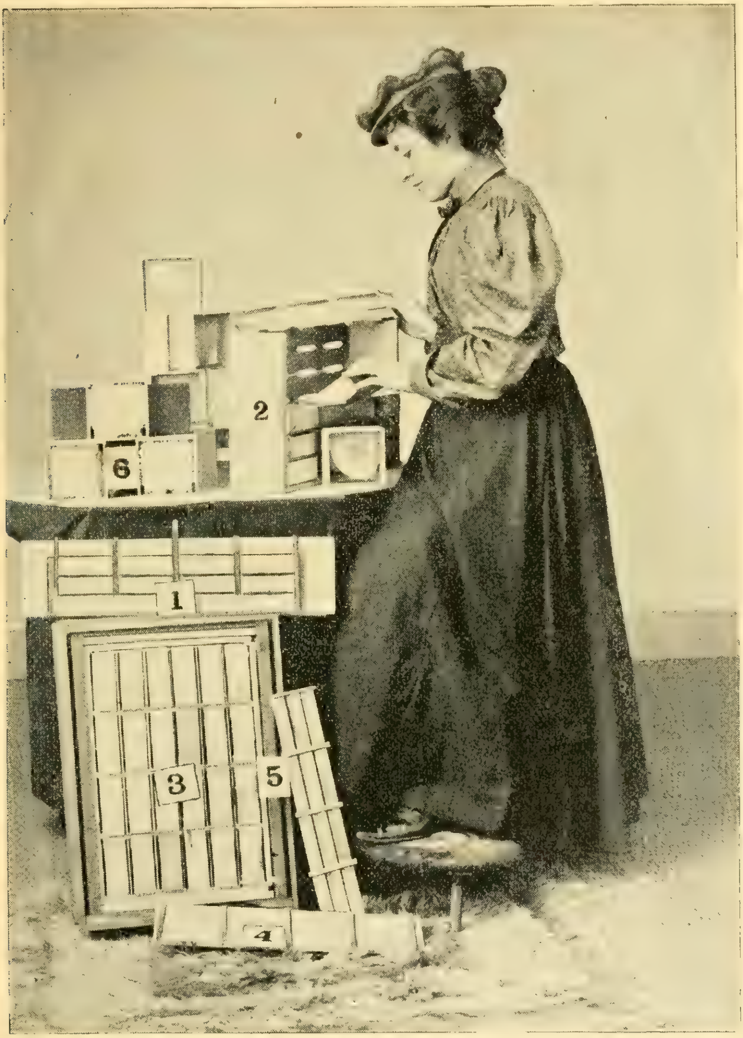
Notre Dame, Ind.

GOLDEN'S PLAIN SECTION SUPER AND FENCE.

Full Directions for Making the Fence.

BY J. A. GOLDEN.

Mr. Root:—I send you a photo of my arrangement of super for the no-bee-space section, and how I manage to change my leveled-down-comb bee-space sections to the no-bee space; also how I arrange the section-holder for the no-bee-space section with slatted separator.



GOLDEN'S SUPER FOR PLAIN SECTION AND FENCE.

I want to say to all who want to try the no-bee-space sections and slatted separator that they will find this arrangement far the handiest and most accurate of any plan—at least that I can suggest.

First, I make a mold to make the slatted separator in—see No. 1 in cut; it is made by tacking on to a smooth true board some ribs lengthwise just where you want spaces between the slats and the width of the opening. Transversely in the board, grooves should be cut to receive the cross-cleats. The cut will show (of course, make this pattern accurate and true). Cut your old or new separator strips straight the width you desire, and the exact length of inside section-holder. Having the little cleats cut, and one chooses to tack them together, drop a cleat into each groove, then lay the slats in their proper spaces, placing another set of cleats on top over the under cleats; drive three tacks through each set of cleats, and lift separator out; clinch the small points, and your separator is completed.

But if one prefers to glue them, it is but a child's play. Having cleats and slats and a pot of hot glue, swipe one side of the little cleats, and put them in the transverse grooves, glue side up, then lay the slats on the glued cleats, and on the slats over the cleats lay another set of cleats, and over all a smooth board, and press one or two minutes; take out the fence and stack up, and keep weighted down for a few hours.

It takes Flody just two minutes to glue a one-fence separator.

No. 2 is the section-holder. It is made solid by nailing the section-slats to two end-boards, just so that four sections will fit between neatly; then nail on one side a cleated board to correspond with cleated separator, and one loose cleated side-board, No. 4, completes the section-holder.

The cut shows Flody filling a holder; but, scold all I would, she would laugh, and say, "Uncle Amos would say that we were getting quite tony, taking our nice gallery to put together our bee-fixtures—it's just too preposterous!"

No. 3 shows one of our bee-way supers, filled with the no-bee-space sections; and holder No. 5, showing how they are held in place. No. 4, a loose side-board, is slipped in, and wedges pushed down between holder and side, and the body of the super holds them permanent, and clamps sections bee-glue tight.

No. 6 shows three sections of honey with the projecting edges clipped off by a circular saw.

Now, friends, if what we have said, aided by the picture, will be the means of helping some poor bee-keeper out of a query as to the no-bee-space-section method, then we have accomplished all we designed in its publication.

SMOKER FUEL.

People may talk about smoker fuel; but dried sunflower stalks, leaves, stems, crown, and all together, lay all other fuel in the shade so far as controlling vicious bees is concerned, giving a dense yet pleasant smoke, holding fire much longer than the majority of fuels recommended. Cut up while green, and cured in the sun, then stored away, it is both handy and inexpensive. Try it.

Reinersville, O.

[Our regular standard fence is turned out on a special gluing-machine; but for odd-sized or irregular, we have a device a good deal similar to what Mr. G. describes, for nailing or gluing. On the last named, we can glue about 50 complete fences per hour, for one person.

Mr. Golden, if I mistake not, has used the plain section and fence for two years back, and has found them to be a success in every way. He, like quite a number of our brethren, has been ahead of the times, and, like another progressive bee-keeper, Mr. Aspinwall, he has a machine section-scraper that I hope to illustrate in a later number. As he is a photographer, he is able to show up his ideas in a little better shape than the majority of bee-keepers.

We are glad to make the acquaintance of Miss Flody, and hope we may have the pleasure of meeting her again, not only at bee conventions but over the pages of the bee-journals.—ED.]

* * *

BEE-KEEPING ESPECIALLY ADAPTED TO WOMEN.

Good Results from Winter; Bees Paying Better than Farming, even when Comb Honey is only 8 and 10 cents.

BY MRS. L. C. AXTELL.

Another year has passed, and I will now send in our report. Our bees wintered without the loss of a colony. One flew away in early spring. We wintered 150 colonies. Having so much small fruit to care for we saw that we should have to have our bees in readiness for swarming before time for picking strawberries, as they come in just before swarming; so we put sections on all good to fair colonies at the time we clipped queens' wings in May. We never before put them on so early. As I did not have any help, I thought I would see how much one woman could do at bee-work by much thought and few steps, and all needed rest. I got all sections on our colonies that could bear them early. My experience is, bees are better off if left alone than to be worked with by much of the help we have had in past years.

We found it greatly prevented swarming to get sections on early. The bees seem to get used to having the sections on and seemed at home in them, and all began storing honey just as soon as there was a surplus beyond filling brood-nest. Some began working in sections before the brood-nest was full. The consequence was, we had so little swarming that we really felt we had no natural swarms. Nearly all were supersedures, though we got 36 lbs. per colony on an average; 150 hives of bees, spring count, and increased 12 colonies. It worked so well putting on sections so early we will do so next spring again; but care must be taken not to put sections on weak colonies, as it will make them more slow to build up.

INCREASING THE CONSUMPTION OF HONEY.

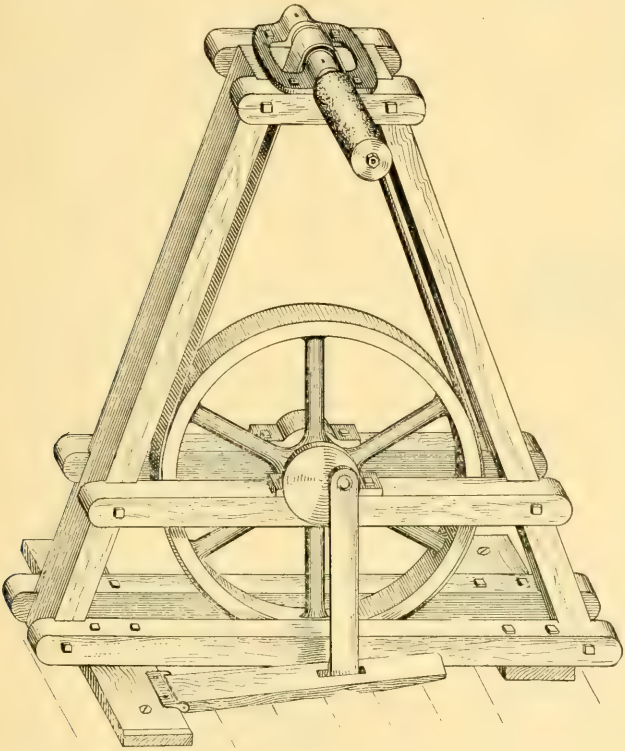
By selling it at home as much as possible, instead of sending so much of it to our large cities, we can do this. If we sell at home we can generally get our shipping-crates back, save commission and railroad expenses, so we can afford to bother a little more by selling in smaller quantities. Bee-keepers have a good deal to say about its cheapness; and yet when compared with almost all other foods we get as good a price for it as any thing else, taking one year with another and the amount of time it takes to produce a pound of honey.

OCCUPATIONS BESIDES BEE-KEEPING.

No one should keep bees exclusive of other occupations, as it is with bee-keeping like all other farm products, failure or partial failure occasionally; and so much of the year would be left without a paying pursuit that we can not afford to be idle. We lay the blame upon the bees, when it is ourselves. So many neglect their bees in years when they fail to store honey that they nearly die; and when a honey crop does come they lose it all, then blame the bees. Bees do not require a great deal of care—not nearly so much as I used to think they needed; but there is certain work that must never be neglected, whether they store honey or not. Unless we count the time we put upon our bees we are apt to feel and think they take more time than they really do; and no one should engage in the work unless he has a love for it; neither should he if he is not willing to bear a sting or so sometimes. If the stings greatly swell upon him he has no business with bees. But people often make a great fuss about a sting when, if they would push ahead, it would be soon forgotten.

Again, I want to mention the present price of honey. At from 10 to 15 cts. it pays us well; even 8 to 10 cts. for comb would pay us better than most other farm products, counting time put on them.

I can take all the care that 150 hives of bees need, the number we had last year, excepting putting hives in cellar and taking out, and carrying the honey from the hives to the house, easier than I can do the general housework and sewing for myself and husband the year round; and I would not neglect the bees in any particular, either. So I do think bee-keeping particularly adapted to woman's work. But let her work at it the year round, just as she does her housework. In the fall and winter let her make her sections up, and get them all ready for the hives; market the honey, but don't rush and worry and fuss about the sales, but work it off from time to time. Be always at it. If there is any thing that needs to be done, just as we always and every day have housework to look after, do it. There has never been a year yet since we kept bees but we could have sold much more honey if we had had it, at fair and remunerative prices. I think we have never had more than one or two entire failures of a honey crop. I nearly always have had enough for them to live on if we took none from them. Such years as they failed to fill up for winter, the surplus in spring would more than pay for winter feeding.



THE ASPINWALL SECTION-CLEANER. SEE EDITORIAL.

People are usually behind time with their bees, judging from how most of our neighbors do. Three of our neighbors came to us for sections after our honey crop was half over. Of course, their bees had the swarming fever, and no wonder they got but little honey. If they would take a bee-paper, and read up how to care for their bees they would make each year many times over enough to pay for the paper, and have some pay for their work. Work done too late on bees is like every thing else—a failure.

Roseville, Ill., Dec. 13.

USE OF SHORT TERMS.

A Correction.

BY S. T. PETTIT.

I have just read Mr. Gemmill's letter and your remarks on page 13. Speaking of dividers, you say, "I have since seen a description of these same followers, and find that the spaces between the slats was $\frac{5}{16}$ inch." That surprised me. I knew better, but for all that I went out to the honey-house and got an armful of these same dividers and measured the spaces. I would not have told you and the public that these spaces were ¼ inch if they were $\frac{5}{16}$ inch. To-day I send you four of these same dividers. Please measure them for yourself. You will see that they have been used by the embryo burr-combs stuck in them. Now, the dividers I used this year with ⅜-inch holes and ¼-inch bee space next the super-wall were free from burr-combs, and also not stuck to the combs, as you may see some of these were. Of course, if they be put in a dry warm room for some time the slats will shrink and thus enlarge the spaces.

May I request that we all use the term divider when referring to that implement, instead of perforated follower, for the following reasons? First, we should save "the wear and tear" of that long expletive word "perforated." Take, for example, Mr. Gemmill's letter and your reply. In these that long word "perforated" is unnecessarily used six times.

Second, the name I gave it, for convenience' sake, after a good deal of thinking, is both expressive and explicative, *as it divides the extra spaces at the sides of the supers into two bee-spaces, and holds them there for the use of the bees*. Please consider that.

Third, it is a new implement; and, although it often takes the place of the follower, it is devised for and performs a new and quite different function, as we all know, I presume.

Fourth, in future as well as at present, both followers and dividers will be needed and used. You very properly advise the use of a thin wide piece behind the divider when necessary. Now, that outside piece is a follower—two distinct implements—and it will simplify things for all time to come to give to each its own appropriate name.

By this time, doubtless, most of your readers and many thousands more know what is meant by the term. S. T. PETTIT.

Belmont, Ont., Can., Jan. 6.

[The dividers that you sent here, friend Pettit, had their slats spaced about ¼ inch plump; but one thing I did not observe before is, they (the slats) were quite narrow, only ⅜ inch—much narrower than those we use. I am not surprised that you had trouble with such narrow slats. I can not help feeling that, with wider ones, and close spacing, we shall be able to secure almost if not quite as good results as will your divider having holes in it. Yes, I am with you exactly in believing that we should have short terms, and that is why I proposed "fence" for "double-cleated separator;" but the reason I used the term "perforated divider" in the footnote in question was to distinguish it from the other divider made of slats. Too much brevity in some instances might lead to confusion.—ED.]

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

PLANTING FOR HONEY.

Question.—What is the best kind of tree to plant for bees? I am thinking of planting quite a large number this spring, if I can find out what will be best.

Answer.—The matter depends very largely on where the person lives who wishes to plant trees for honey. In all northern localities there is no tree that gives as great a yield of honey as the linden (or basswood, as it is more familiarly known); and were I north of latitude forty, that would be the tree I would plant, were I to plant any exclusively for honey. This tree is also very valuable for lumber; but unless planted too closely to do the best for honey, lumber of little account could be gotten from it on account of its growing so low and branching.

For fruit and honey combined, there is probably nothing better than the apple. Some years, when the weather is just right during its blossoming, it will yield honey nearly if not quite equal to basswood as to quantity, and in quality it is second only to white clover and basswood, if allowed to stay on the hive for a month or two, or if kept in a warm dry room for two or three months till thoroughly thickened and ripened. Then the apple blossoms at a time when a little stimulation in the shape of nectar from the fields is of the greatest value to the apiarist in populating his hives with brood, which will arrive on the stage of action just in time to take advantage of the honey-flow from white clover and basswood, which makes the honey which does come from it of double value. So if I were to plant trees for honey I would include the apple as one of those trees, as it possesses the advantages of giving a good honey, giving said honey just at a time when it is of the greatest benefit to the apiarist, and gives, in addition, a kind of fruit that is desired by everybody to eat out of the hand, and for cooking purposes, and which always commands a ready price in any market of the world.

Then I would plant of basswood largely here at the north; and if I lived so far south that basswood would not thrive, nor apple either, then, from what correspondence I have had, I would plant the black locust or sourwood, as I understand that each of these gives good yields of honey in most of the States south of latitude forty. But, to be candid, I am not sure that I would plant any of the trees very largely for honey, having that as the main object, unless I were looking forward to generations yet unborn, for there is little use of setting out any tree with the expectation of gaining any immediate benefit; and if set out for those who are to come after, in all probability the place would change occupants, or the occupants conclude that the land could be occupied more profitably with something else, when, in either case, our labor in planting would have been mostly in vain. It takes a long time for any tree to grow to where it will yield honey of any great amount, as I well know; for when I moved where I am now located, I set out both apple-trees and basswood; and although that was twenty-two years ago, the bees have done very little on them yet, as compared with trees of more advanced age. Father set some basswood-trees in the open field thirty years ago, and on those the bees find sufficient work to make quite a good business at it, but nothing on these equal to a tree that I helped him set out near the old home where I was raised, forty odd years ago. From what I know, I should say it takes at least fifty years from the time of planting for a basswood-tree to yield its maximum flow of honey, and basswood is one of the most rapid-growing trees within my knowledge.

HONEY-PLANTS FOR BEES.

Question.—What seed is best to sow next spring for honey-plants for bees?

Answer.—White clover, alsike clover, buckwheat, melilot (or sweet clover), rape, mustard, pleurisy-root, spider-plant, Rocky Mountain bee-plant, Chapman honey-plant, golden honey-plant, etc., in about the order named; but with the exception of the first six, I do not think I would sow any of them, only by way of experiment or as a source of amusement; for I do not think it can be made to pay to occupy good land with any kind of plant that gives nothing of value except honey, because it takes acres of any kind of plants for the bees to gather enough nectar to store any surplus from. It may pay to sow any of these in waste places, as they would take the place of plants which were worse than useless, through the burrs and noxious weeds they produce. Neither would I plant rape and mustard, except where there was a call for the seed which would be sufficient to pay for its cultivation, allowing the bees to come in with their part as so much profit. As to the sweet clover, with me I have failed to get it to grow except on sandy or gravelly soil, sow as much of it as I would; and as the most of our waste ground is of this nature, I think considerable of it, as it will take possession of these places and hold it from the more noxious weeds which are sure to grow on soils not occupied by something better. Just why sweet clover has ever been classed as a weed I can not see, for here in York State it is far more easy to kill than any of the other kinds of clovers, none of it ever being seen in cultivated fields, while white and alsike clover persist in growing in fields and gardens, with a tenacity which is often very provoking, especially in beds of strawberries. The two clovers that head the list, and buckwheat, are familiar to all, and are sown and grown by most farmers in localities where they will thrive. Buckwheat, in most localities, is a very paying crop for the grain it yields; while the honey from it, though disliked by many on account of its dark color and pungent taste, finds a sale in market at remunerative prices, considering that it comes at a time of year when the bees are all built up strong of themselves, so that there is no need of the stimulative feeding and coaxing which is often required to get them in condition for a honey-harvest coming earlier in the season. White clover, after once being sown, propagates itself, and is valuable in pasture land and for hay, while as a honey-plant, giving the finest quality of honey, it is second to none in the world. Alsike clover does not hold to the soil as well as the white; but as it is more valuable for hay than the white variety, it is so desired that nearly all farmers sow it now, and the bee comes in for her share, wherever sown. With us, the honey from alsike clover borders on the pink as to color, hence is not sought after on account of its snowy whiteness, as is that from white clover. But in flavor I consider it fully equal to the white.

HEADS OF GRAIN FROM DIFFERENT FIELDS

TRANS-MISSISSIPPI NOTES.

Our bee-keepers and supply-dealers who contemplate taking space in the bureau of bee-industries, at the Trans-Mississippi and International Exposition should not forget the advertising facilities offered them through making displays in this bureau.

In addition to the space accorded exhibitors, the Exposition will furnish each exhibitor ordinary light, ordinary guards, twenty words each in 100,000 official catalogs free of charge, and all expense pertaining to the jury of awards. These items alone will cover every cent received by the management for space received by exhibitors.

Dr. Emerson T. Abbott, of Missouri, commissioner, has been appointed one of a committee of his commission on horticulture, etc. We may reasonably expect some good displays from that State.

Mr. Aiken and Secretary Rauchfuss, of Colorado, are making a determined effort to have that State properly represented in the bureau of bee-industries. Mr. Pollock, Secretary of the Wisconsin Commission, visited Omaha this week, and we shall hear from Wisconsin soon. E. WHITCOMB.

Friend, Neb., Jan. 12.

HIVING SWARMS ON POLES.

I notice in the remarks of Dr. Miller, in Stray Straws, in GLEANINGS, page 876, in regard to the ventilation of hives, by N. Genn, in which he says, "No entrance in hive or board. In spring he puts a loose lath under each side, and one under the back end. When warmer he takes out the back lath," etc. Now, what I want to know is, what he does with his hives during the winter. If there is no entrance, in what way do the bees clean the hives? or must they be wintered in the cellar without bottom-board.

Riner, O. J. H. CLEVENGER.

[Dr. Miller uses a reversible bottom-board a good deal like the Danzenbaker that has been recently illustrated in these columns. One side of the bottom-board permits of the ordinary bee-space, and the other allows a two-inch space under the frame. In winter, if I am correct, the doctor sets his hives in the cellar with the deep space of the bottom-board next to the frames. To keep out mice, coarse-mesh wire cloth is set before the entrance. The mesh is coarse enough so that the bees can readily pass; but big bugs and animals are kept out.—ED.]

TOO MUCH SWARMING; WHAT IS THE REMEDY?

I am in the fix of the bee-man you mention, whose bees you went to see while you were at the bee congress. I get more swarms than honey. Can you help me out? I have enough hives of bees until I see how they are going to pan out in honey, as my location may not be a good honey section, though it appears to me it should be. It is high time they were paying their way, as this is the third year since I started with them; and, though I get about two swarms from each hive a season, this is the first year I have got even enough to eat; and this year I got only about 10 lbs. per hive, counting new hives and all. Some of the hives would make about 50 lbs., and some none. Is there no better way of preventing swarming than destroying the queen-cells every nine days? How would it do to place a queen-bee guard in the mouth of the hive when catching a swarm, and so find the queen, and kill her, and return the bees to the old hive? Or will they go in and leave her on the outside? It is very difficult for me to find her always, in a swarm. Or how would it do to save all swarms, and in the fall of the year consolidate and save the hives of comb and honey to catch next season's swarms in, thus giving them the advantage that an old hive would have. JOHN CAMM.

Lynchburg, Va., Dec. 21.

[Without seeing your hives and knowing your methods of work, it would be difficult to tell exactly where the trouble lies. Perhaps your brood-nest is small for your locality; and it is possible that you do not give them room *soon* enough. I would put the sections on a little earlier than you really think you need to have them on (see Mrs. Axtell's article in this issue). I would also enlarge the entrance just at the approach of the honey-flow. This can most easily be done by placing four blocks, ⅞ inch thick, under the four corners of the hive, and resting on the four corners of the bottom-board. Don't let the bees get into the fashion of clustering out, because if they once get into the habit of it they are likely to keep it up till they swarm. If these methods already given fail to reduce swarming, then it may be you have a strain of bees that are rather more given to that habit than they ought to be. In this case it will be well to change queens; and while in this connection you can in any case do something to reduce swarming by keeping nothing but young queens in the hive—certainly those not over two years old. —ED.]

MRS. HARRISON AGAIN IN FLORIDA; JAPONICAS; SOUTHERN CEMETERIES; BEES VISITING CUT FLOWERS.

While waiting at Mobile, Ala., for a steamer to cross the Gulf of Mexico, to my winter home, St. Andrews Bay, Fla., I visited Magnolia Cemetery, in company with a traveling companion, Dec. 29th. The sun was shining, and the thermometer was at 55 degrees when we took an electric car. One of the inducements to visit this cemetery was the many varieties of japonicas in bloom; sweet-scented violets, narcissus, sweet olives, and roses of various hues; japonicas in various hues of red, pink, and white of delicate purity. A lady at the cemetery told us that some large japonicas, that had been trained to a single stem, and were more than one foot in diameter at the base, had been brought from France by her grandfather, many years ago. His remains repose in their shade, and the beautiful blossoms pay tribute to his memory.

I sat down to rest upon the stone coping, near the head of a grave covered with Christmas decorations. Near me was a wreath of japonica, with variegated bloom, pink and white, in stripes running from the center to the circumference. A bee was working upon this wreath, and it was well loaded with pollen. A number of bees were working upon a bouquet in a glass vessel. This is the first time I ever noticed bees working upon cut flowers.

There is a legend that, when the queen of Sheba visited king Solomon, she placed artificial flowers and natural ones at a distance from him, and requested him to inform her which were the natural ones. Solomon ordered a servant to open a window, and bees came in and flew to the natural ones.

I noticed several things in this cemetery, new to me. A tent was erected over an open grave, and I was told that this was the custom during interments, and it remained there to protect the floral offerings from sun and rain for one week. Other graves had light framework, covered with awning, to protect bouques placed there. Headstones named the disease, the cause of death, such as consumption, yellow fever, or killed in battle.

One corner of this cemetery is consecrated to the burial of Confederate soldiers, and is kept in order by the State of Alabama. The graves are in rows, with headstones in gray, inscribed with name, or "Unknown." A large monument, with carved soldier on top, with knapsack and gun, is a silent sentinel over the remains of thousands.

In another part of this cemetery the United States government has inclosed with a brick wall the graves of those who fell in defense of the Union, and marked their resting-place with white marble headstones. A large flagstaff is in the center of the grounds. and a commodious brick house within the inclosure, where the keeper resides.

Mobile, Ala., Dec. 30. MRS. L. HARRISON.

THE FENCE AND PLAIN SECTION.

I too am very much interested in the new separator and sections, if you so call them new; your one piece section 4¼x4¼x1½ thick is new; but the fence was made ten years ago.

The fence I first made was 3½ inches wide, 3 slats in it, ¼ inch between slats. This I found was too narrow for the fence, and the space ¼ inch between slats too wide; for large colonies would build the combs at top and bottom wider than the section. The 3½ fence makes ¼ inch to the top and bottom of a 4¼x 4¼ section, and this is too much. I make mine now 3¾ wide, 4 slats, slats $\frac{3}{16}$ apart. The 3¾ fence gives ⅛ at top and bottom of 4¼ section; the cleats $\frac{1}{6}$x¼; end cleats, $\frac{1}{6}$x⅜. I think $\frac{3}{16}$ thick would be better. We in Jefferson are glad to know that you can furnish this style. W. S. ANDREWS.

Jefferson, O., Dec. 6.

[Yes, the fence is at least ten years old, and I have repeatedly said so in these columns. The fence that you have adopted, if I understand correctly, is about the sort of fence that we are putting out on the market for this season. If this is true, your own experience, friend A., shows that we have struck pretty nearly the right construction.—ED.]

ANOTHER BLIZZARD IN FLORIDA.

This section is again sorely stricken. We had frosts—in fact, ice—for four successive nights; but only one did us damage—the one of the 3d inst. Our hopes here on the St. Lucie River, for a crop of pineapples this season, are practically gone. How much damage is done to the plants themselves will not be accurately known for some weeks; but we hope the most of them are alive.

I have heard but little or no definite news from the orange localities, but hope from what we do hear that little or no material damage has been done to the trees. It is as yet impossible to tell how much if any damage has been done the bee-interests of the East Coast. I hardly think they are seriously injured, but certainly they have not been helped any.

O. O. POPPLETON.

Stuart, Florida, Jan. 6.

[Since the above was received we have had information from other points, to the effect that the orange-trees are damaged but little unless it is in a few localities. Vegetables for the northern markets are in many cases damaged badly, and the strawberry crop will have a setback of several weeks; but if no more severe weather occurs the result will not be very much worse than what happens from late frosts more or less most winters.—ED.]

HOFFMAN FRAMES SUPERIOR TO STAPLED FRAMES.

We have used staples, nails, bent tin, and iron-blocks for spacing frames sidewise, but they can never take the place of any arrangement like the Hoffman frames, as all these (the staples, etc.), permit the bottom to vary in their spacing.

Why not call the "no-bee-way" sections "fence sections"? I admit that the former name explains at once what these sections are, but we all shall know what a "fence section" is, as they must be used with a fence.

E. KRETCHMER.

Red Oak, Iowa, Dec. 11, 1897.

[Fence section would be a good name; but the term "plain section" has been used for over a year, and is a good descriptive name. Why change now?—ED.]

BEGINNERS' QUESTION BOX BY E. R. ROOT

I. M., Can.—We are still using a few of the original A. I. Root two-story chaff hives; but they are fast being displaced by the more convenient single-story double-walled hive. These latter give good results in wintering, and can be handled in every way the same as a single-walled hive.

W. E. B., Tex.—I do not really understand what you mean by robbing colonies at this time of the year. If you have a surplus of stores, and you desire to take away some of them, I should think you could do so in your locality, at least, without detriment; but ordinarily it is bad policy to meddle with colonies during winter—worse yet, to take away stores.

A. C., Ill.—In regard to the item on page 769 of GLEANINGS, in reference to the Danzenbaker sections, the first sections that Mr. Danzenbaker sent out last season had bee-ways on *both* sides; but those that were sent out a little later had bee ways on only one side, the same as those described in GLEANINGS; but in either case the bee-ways were differently constructed from those in the ordinary section, as you may know from the sections which you have.

J. E. M., Mich.—I can not understand why your bees should tear down your foundation, unless you left the supers on the hives after the honey-flow. They will do this sometimes. It is possible that you used extra-thin foundation when it would have been better to use the ordinary thin. The extra thin will do very nicely, providing the supers are not put on too soon.

G. E. W., N. Y.—If there is any place in the world where bees and fruit can be made to do well it is in Central New York, especially along the line of one of those beautiful lakes. Whether you can make it pay will depend upon your skill and adaptation to the business. It is not always wise to depend upon bees alone, nor, for that matter, fruit alone. The two together might do, however, very well; but I would not advise you to sacrifice your present interests entirely. If you can somehow arrange to try the new venture for one season you will be in a better position to know what you can do in the future.

R. G. H., Wash.—If I am correct the only way to get the pollen out of combs is to give the combs to the bees in the spring, and let them dig it out. You can make an attempt at it by soaking the combs in warm water a few hours, then putting them into the extractor. By this means you will throw out some of the bee-bread.

The albinos are nothing more nor less than a strain of Italians that have bright silvery fuzz bands between the bands of gold; but as they are only bees to please the eye, and were thought by some to be short-lived, the demand kept waning till it ceased. I do not know where they can now be obtained.

The red-clover strain of Italians was reared by selection, the same as albinos; but in this case it was bees for business and not for beauty. You can obtain these bees of J. P. Moore, Pendleton, Ky., one of our old advertisers.

R. C. H., Ohio.—As to which frame is better—the staple-spaced thick-top or the regular Hoffman—will depend upon the locality, and whether propolis is deposited very freely in your locality or not. If it is, then I would recommend the frame having staples as spacers; if not, you would do well to select the Hoffman.

If you have set aside combs filled with stores, these may be given along in the spring when colonies run short; but if a hive has from 20 to 25 pounds, ordinarily it will not need these extra combs.

I would transfer the combs that are out of the hive whenever it can be done most conveniently. As to the combs that are already in the hives, these you can transfer along next spring, and I would make a job of it by doing it all at once rather than to do part at one time and part at another.

J. D., Mich.—Bees are sometimes trapped and poisoned by malicious persons—fruit-men who imagine that bees are detrimental to fruit-growing. Some instances have been known where they killed the bees by setting out syrup poisoned with Paris green, or some other equally poisonous ingredient; but such a practice is against the law, and any person so poisoning bees must take the consequences.

The space between the bottom edge of the comb and the bottom-bar is usually left by the bees. The only way that I know of to get the bees to fill this up is to turn the hive bottom upward, including the whole set of frames, during the honey-flow, for a day or two. Of course, the frames will have to be secured in position during this time. I would not fuss to cut strips of comb to put in this space.

F. M., Wis.—It is impossible to give a definite reason why your bees should swarm, without knowing more of the conditions. An entrance that is too small, or a hive of limited capacity, especially if it stands out in the sun, might induce the extra swarming. Next summer, try the experiment of raising the hive off the bottom and putting four blocks under, one at each corner, ⅞ inch thick; then be sure the bees have plenty of room in the super. When running for extracted honey, give the bees plenty of empty combs. For full particulars in regard to the problem of swarming, see our A B C of Bee Culture, and also page 30 of catalog. There are some brief hints in the catalog, especially on page 33.

J. M. R., Wis.—You ask for information as to the utility of compressed air produced by wind or water power to run a dynamo, and whether it would be cheaper than an immense lot of water as a motive power. I do not think it would pay you to fuss with either one of these for the purpose named. It will be far cheaper, certainly in the first cost, to purchase a little steam-engine. The coal consumption would not begin to cost what the interest would be on the investment for a large tank of water or compressed-air apparatus. What is cheaper to maintain and operate, although the first cost is somewhat more, is a gasoline-engine. But small dynamos and small engines, can not compare in efficiency and economy with a large dynamo and engine. A small dynamo, however, will work economically in a shop or mill where there is power for other purposes. In this case the dynamo is usually belted from some line-shaft or countershaft.

A. S., N. Y.—You ask what I think of the Aspinwall super, as shown in the last *Review*. There are some good things about it, but, like yourself, I could hardly like the tin separators. It would be more expensive, and then it seems to me it does not offer some of the advantages afforded by the fences. Then, too, I do not quite like a super that is made up of 4 pieces held together by means of rods or bolts. Such an arrangement is expensive to start on, and awkward and unwieldy to pack away in a wagon or on shelves when full of sections. If I wanted one loose side, I should much prefer, I think, the super illustrated in November 15th GLEANINGS, that is used by Miles Norton.

With regard to the bottom-board, the ordinary run of them are a little short, it is true. When they are used in connection with the hive-stand, illustrated in January 15th GLEANINGS, in "Trade Notes," I think the difficulty you refer to is wholly obviated. In fact, the hive-stand in question not only raises the hive up to a convenient working distance, but in effect lengthens out the bottom-board.

With regard to the thumb-screws, we can furnish them with any of our supers; in fact, we supply them regularly with the Hilton T super.

If I were to choose a locality for bees I would either select a locality in a farming or fruit country, near one of those beautiful lakes in York State, or I would jump clear over into California or to Colorado, the central portion. Southern California, Eastern Nebraska, Southern Wisconsin, Central and Eastern New York, in my judgment, offer the best field for bees. I am not sure that you could better your locality. The places that I visited last summer were considerably overstocked, and I don't suppose you would find any of them very suitable.

J. W. K., Kan.—Referring to yours of Dec. 30, I would say that we had not contemplated changing the directions for introducing queens, that appear on the queen-cage covers. You question the point whether it is wise to have a colony queenless a day or so before the new queen is introduced, and think you secure better results by removing the old queen, and caging the new one at one and the same operation. This may work in a good many instances; but my experience leads me to believe that it is better for a colony to *feel* its own queenlessness; and in order to have a knowledge of this condition, the hive must be queenless for at least 24 hours. On the other hand, if a new queen is given to them at the same time the old one is taken away, they would, in some instances at least, pounce on to the wire cloth, and crowd over it so tightly in their efforts to get at the queen, as to be apt to smother her. If, however, they positively knew that they were queenless, their behavior toward the new mother would be much more mild. No, I think the directions as given on the queen-cage cover are about as nearly right as they can be. I originally wrote them myself, and I now see that all or nearly all of the queen-breeders have adopted them for their own queen-cages, which I regard as evidence that the directions are satisfactory to them.

You think it would be an improvement if our division-boards were made longer so as to fit snugly, and be bee-tight except at the bottom. The best answer I can make is, that if you try it once you will become disgusted with it. I tried it quite thoroughly a few years ago, and I finally was very glad to yank them out of all the hives and put in their stead division-boards with a bee-space all around, the same as brood-frames. Mr. Julius Hoffman, of Hoffman-frame fame, used to tack strips of rubber on the ends of the division-boards, the rubber abutting up against the ends of the hive. This worked very nicely, for the rubber was yielding, and the bees could never make it fast with propolis.

EDITORIAL BY E. R. ROOT

EIGHT extra pages this time. We have so much good matter on hand that we are obliged to give this extra space.

THE subscription-clerk tells me that new subscribers are joining our ranks in a way they have not done for years. Let the good work go on. The more subscribers, the better we can afford to make the journal.

WHEN the idea of grading honey by means of a photograph was first advanced, friend Hutchinson though it too fanciful to be even considered; but the more he has thought of it, the more practical it seemed; and then he adds, "I have not yet forgotten the derisive manner in which I laughed when I first saw and heard of a bee-escape." Neither have I forgotten how I laughed in the same derisive way at Danzenbaker's fence, or, as he then called it, cleated separator. Why! to be obliged to fuss with so many little sticks, slats, and nails was simply *awful;* and in my heart I actually pitied some of friend Danzenbaker's (poor deluded) customers. While I hold the same opinion yet in regard to the fussy nailing, machinery and glue have obviated all this; and his cleated separators, or fences, are not the "awful things" they once were.

CONSOLIDATING THE OLD AND THE NEW UNION.

IT seems as if this question were coming up, and bound to come up. Here is a copy of a letter sent to General Manager Secor, which will explain itself:

> *Hon. Eugene Secor:*—At the meeting of the California Bee-keepers' Association on the 11th inst., the subject of the old and the new Bee-keepers' Union was taken up for discussion, which resulted in the following resolutions:
>
> *Resolved*, That the new Union should absorb the old. Forty-three in favor of, no opposition
>
> *Resolved*, That the Secretary be instructed to inform the respective managers of the Unions of this action.
>
> I therefore transmit the same to you with the inclosed $3.00, and the names of the following persons for membership.
>
> Hoping that the success of the new Union is only a question of a strengthening in the way of funds,
>
> I remain fraternally yours, J. H. MARTIN.

I feel sure that this consolidation can be effected in time. The action taken by the California bee-keepers is in the right direction. If similar resolutions are passed by other organizations it will do much toward bringing about the desired result. But of course the amalgamation, if effected at all, would have to be sanctioned by the members of both organizations, otherwise it will be indefinitely postponed.

In case amalgamation is effected, the thought has occurred to me that there might be two branches of work—one to take the defense line, managed by Mr. Newman, and the other take up adulteration, managed by Mr. Secor. I do not know that there could be two General Managers; but there could be two officers, and those two officers might be in two different localities.

THE REV. DR. TALMAGE AND THE BEES.

LAST Sunday, Jan. 23, Rev. Dr. Talmage preached a sermon on honey, taking as his text I. Sam. 14:43, and from it he draws a good many valuable lessons; but it is evident that, in looking up the subject of the architecture of the honey comb, he has in his library some books that have borrowed from bee-lore of a century ago, because I hardly think that Dr. Talmage would have manufactured the following out of whole cloth. In telling how the bees make honey-comb he says:

"These winged toilers first make eight strips of wax; and with their antennæ, which are to them hammer and chisel and square and plumb-line, they fashion them for use. Two and two these workers shape the wall. If an accident happens, they put up buttresses of extra beams to remedy the damage."

Then a little further on, in telling what causes bees to swarm, he says:

"The mother-bee starts for a new home; and because of this the other bees of the hive get into an excitement, which raises the heat of the hive some four degrees; and they must die unless they leave their old apartment, and they follow the mother-bee, and alight on a branch of a tree, and cling to each other, and hold on until a committee of two or three bees has explored the region and found a hole in a tree or rock not far off from a stream of water."

I do not think Dr. Talmage would knowingly utter such nonsense; and by a careful reading of the sermon I do not find that either one of the quotations above is at all necessary for the elucidation of some of the grand truths he brings out in the line of touching forbidden sweets. That the good doctor may not fall into a similar error again, we are sending him, complimentary, a copy of our A B C of Bee Culture. We especially commend to his attention the article on "Honey-comb," and also the other article, on "Swarming."

A MACHINE FOR CLEANING SECTIONS; THE ASPINWALL SUPER AND PLAIN SECTION.

IN the *Bee-keepers' Review* for December appears a valuable article from L. A. Aspinwall, of Jackson, Mich., on the subject of plain sections. Mr. A. is one of the pioneers in the use of boxes without bee-ways; and having tested them most thoroughly he is in position to know something of their value. He enumerates, among their advantages, some of those I have already mentioned in the various issues, among which he says that the "plain section also makes a much nicer package, and the wrapping-paper is less liable to break while being tied. . . That the plain section also admits of the most perfect and rapid work in cleaning by machinery;" and that "not only every vestige of propolis is removed, but also the stains;" and then he adds:

> The transcendent point of excellence, however, is the beauty and attractiveness of the finished product in such sections when filled between properly constructed separators and super sides. My honey has

> thus far commanded the highest price, and is sold exclusively by the best and most reliable grocers here in Jackson—one house having already spoken for the sale of it another season to the exclusion of all others, notwithstanding honey has been sold by farmer bee-keepers at ruinous prices; but, being produced without separators the sections are more or less bulged, and lack the snowy whiteness which characterizes clover honey when removed as soon as well filled and sealed. Of course, the sections being "machine cleaned" has added much to the attractiveness of my honey.

The separator that Mr. Aspinwall uses is made of tin; and immediately opposite the uprights of the sections oblong transverse slots are cut, reaching, I should say, within half an inch of each edge of the separator. On this edge not cut out, ¼-inch stops are fastened, the purpose of which is to separate the separator a bee-space from the sections. With this device Mr. Aspinwall secures in effect sections open all round. The result is that his comb honey, according to Mr. Soper, is almost entirely free from corner holes—a matter of great importance.

The super consists of two sides that are clamped against the rows of sections, and the sections and separators are held in position by means of rods and bolts.

Referring to the section-cleaner, an illustration of which appears in another column by the courtesy of the *Bee-keepers' Review*, Mr. Aspinwall says:

> I consider it indispensable in these days of close competition. The work is perfect as regards the section edges, which are cleaned instantly, and made to appear new, adding very much to the appearance of the honey. The surfaces are a little slower when considerably coated with propolis, otherwise a single movement across the roll is sufficient to make them white and clean. Although no difficulty has been experienced in holding the sections, I shall construct a rest which possibly, for novices, will be security against any breakage of the sections or comb. Thus far I have had no breakage whatever. The accompanying illustration furnishes a general view of its construction. It is secured to the floor by screws.

No detailed description is given beyond what is shown in the cut. Although I do not know positively, I am rather of the opinion that the cylinder projecting out beyond the machine, and on which the sections are placed to be cleaned, is covered with sandpaper. The wonder with me is that this paper does not become filled with propolis so as to be practically inoperative. However, it evidently does its work.

Mr. Aspinwall closes his interesting article by stating that "the machine is easily worked, and its capacity is about twice that of hand work. The increasing of its capacity is yet to be developed." I am a little surprised that it only doubles hand work; but even then it is worth all it costs; but with most bee-keepers I am inclined to believe it would triple and quadruple ordinary hand scraping; and the results in any case would be far superior.

In our next issue I hope to show you a view of the Golden section-cleaner—a machine that makes use of somewhat the same principle.

As I look at the cut of the Aspinwall machine I can not help feeling that the day for hand scraping of sections will soon go—no more gashing into the nice honey with the knife or with awkward fingers, and no more bad unsightly stains as used to be present in the bee-ways of the old-style sections. To my mind, the future market will demand a box entirely clear of stain and propolis. The world does move, even in beedom.

WHAT DR. MILLER THINKS OF MACHINE CLEANERS.

After writing the foregoing, a letter from Dr. Miller in regard to machine section-cleaners is at hand. Referring to the Golden machine as illustrated in the *Amer. Bee Journal*, which, by the way, represents more nearly his idea of what the machine should be, he says: "I suspect that a section-cleaner is one of the things bound to come, and there won't be old sewing-machines enough to go round." Then referring to the Aspinwall machine which we illustrated, he thinks it ought to have a sort of steady rest. He writes:

> Try to sharpen a pocket-knife by holding it on a grindstone with one hand. It jiggles all over. Now have some kind of rest to hold it steady. That's what my improvement's aiming at. With Aspinwall's arrangement you hold the weight of the section with nothing to help hold it level. With my arrangement the weight of the section is not held by the hand, but rests on a horizontal surface, and that helps hold it steady. C. C. MILLER.

I have a machine (in my head) that embodies all the good points of all, and (in my head) it will clean faster and better than either of the ones above mentioned. It makes use of an upright revolving disk with a flat surface for the sandpaper. The cost will be small—much less than that of either of the machines referred to.

A PURE-FOOD CONGRESS TO BE HELD IN WASHINGTON; THE UNITED STATES BEE-KEEPERS' UNION SHOULD BE REPRESENTED.

A CALL has been issued to all the friends of pure food to meet in Washington on Wednesday, March 2d next. The object of this congress will be to discuss the need of legislation, and how best to secure it. From the call that has been made I make the following extract:

> The question of the character of the food, drink, and drugs consumed by a people is unquestionably one of the most important that can be discussed by them. Adulteration, misbranding, sophistication, substitution, and imitation undoubtedly exist to an alarming extent, to the detriment of health, legitimate business, and sound morals, and it becomes needful to secure legislation that will check this growing evil and permit an honest man to do an honest business.

In regard to the apportionment of delegates the Governor of each State and Territory is requested to appoint ten—four agriculturists, two pharmacists, one wholesale grocer, one retail grocer, one food manufacturer, one proprietary manufacturer. The Secretary of Agriculture is to appoint five, and the Commissioner of Internal Revenue five; the Surgeon-general of the Army five; the Surgeon-general of the Navy five; the various boards of health from the various cities will also be represented, as well as the boards of trade and chambers of commerce. The agricultural associations will also have their delegates. The National Grange is to have five; each State Grange two, and so on down till we get to the National Bee-keepers' Association, which is to be allowed three, and each State bee-keepers' association one.

This will certainly be a very important meeting; and if it is thoroughly represented, much good can and should be done. I make the suggestion or recommendation, if you please, to the Board of Directors of the U. S. B. K. U., that that body send its General Manager, Hon. Eugene Secor, or its Secretary, Dr. A. B. Mason, to this congress, for there will be reduced railroad rates. It might be wise to invite one or two others to be present with him, also members of the Association, but who should be in the immediate vicinity of Washington, to save railroad fare. I am now thinking of our friend Danzenbaker, who is in the city, and no man is more interested in pure food than he. Perhaps apicultural experimenter C. H. Lake would be another. The new Union is already preparing for work; and it seems to me that, meeting with and coöperating in this way with the other friends of pure food, it will be one of the first moves for the new Union, and should by all means be recommended by the Board. In a letter recently received it appears that the General Manager is looking now toward the adulteration question.

THE LANGSTROTH-MONUMENT FUND; LOVING OUR NEIGHBOR BETTER THAN OURSELVES.

WE have already made several appeals for funds from bee keepers, for the erection of a monument or a tombstone for father Langstroth. Money has been coming in in little amounts, so that now the aggregate is something like $60.00, including the amount secured by the *American Bee Journal* I had hoped that we might be able to raise $100 easily. It seems to me we surely ought to make it $75.00, and therefore hope that bee-keepers will send in what they think than can afford. Any amount from five cents up to a dollar will be received and credited to the Langstroth-monument fund. I do not expect to make another appeal, and hope, therefore, our readers will heed this our "last call." I am well aware that there are suffering Cubans and starving Armenians, and that calls for funds from mission fields were never more urgent than now. I would not ask for one penny for any one of these benevolences; but if you have a nickel, a quarter, a half-dollar, or a dollar, that you are going to spend for something you do not really need, let us have it for the monument fund. One of our workmen, a few moments ago, handed me a dollar.

"What is that for?" I asked.

"Why, that is to go to the fund that you are making up for the suffering Cubans."*

"Why," said I, "if all were doing as well in proportion as you are, the Cubans would have enough and to spare."

"Well," said he, "I know I really can not afford it; but I had taken the dollar to buy sugar with; but I concluded that my brother-man in Cuba needed the bare necessities more than I needed the sugar, and here is the dollar."

Now, friends, what a beautiful world this would be if every one were to show a similar spirit! and I might say in closing that we will receive money for the Cuban sufferers as well as for the monument to the memory of father Langstroth.

STEALING THE OTHER MAN'S THUNDER.

WHEN a thing has pronounced merit, and there is a big demand for it, others are liable to copy it, or, if they can not copy it, make something like it, and give it nearly the same name. A case is in point in the matter of plated silverware. One Rogers made plated silver spoons, knives, and forks that earned for him an enviable reputation. Very soon, perhaps half a dozen other concerns adopted the same name, with a slight change. There are, I believe, Rogers Brothers, Rogers & Bro., Wm. Rogers Mfg. Co., etc., all making the same goods. The same has been true in regard to certain patent medicines. Just as soon as their proprietors have secured for them a big demand (whether they have merit or not) other firms begin making the same stuff, and calling it by *almost* the same name. The average person does not know exactly the name of the article; and if he sees a name that is almost like the original he jumps at the conclusion that it is the original.

Within a year or so, or since our "Weed new process" foundation was put on the market, various persons in this and other countries have advertised their own "new process;" and lately they are getting to call it "new process" and nothing else, the evident purpose being to borrow or steal the advertising prestige secured at an enormous cost. The fact of the matter is, the "Weed new process" is entirely different from any other so-called new-process foundation. All the other continuous-sheet-making machines employ the old dipping process; but the Weed machinery makes continuous sheets on an entirely different principle.

THE LATEST NEWS, JUST AS WE GO TO PRESS.

TO-MORROW, Feb. 1st, Blue Eyes leaves her home and starts out to make a home of her own with Mr. Arthur L. Boyden, formerly of Saline, Mich. At the same time, Miss Constance surrenders her place as a member of the A. I. Root Co., in favor of Mr. Boyden, who has been for several years the right-hand man of our business manager, Mr. J. T. Calvert. The young people will take a trip to the bridegroom's home in Michigan. As both are connected with the office more or less, they have deputized your humble servant, A. I. R., to take their wedding-trip for them while they remain at home (after a week's absence) and look after business in the office. Accordingly your humble servant expects to sail for the Bermuda Islands on the steamer Trinidad, sailing from New York at 10 o'clock, Feb. 9. Look out for notes of travel describing the way they grow Bermuda onions, potatoes, etc., for the New York markets. Bermuda is said to contain more than 100 miles of the best roads for wheeling, on the face of the earth. As these roads are all made of coral, as is nearly the whole of the island, for that matter, there is never either dust or mud. All the water goes down through the coral so quickly that you can start riding anywhere as soon as it stops raining.

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* The A. I. Root Co. sent $30 for the Cubans.

OUR HOMES,

BY A. I. ROOT.

Behold how good and how pleasant it is for brethren to dwell together in unity.—PSALM 133:1.

Let us not weary in well doing; for in due season we shall reap if we faint not.—GAL. 6:9.

Thanks be to God who giveth us the victory through our Lord Jesus Christ.—I. COR. 15:57.

THE NATIONAL CONVENTION OF THE AMERICAN ANTI-SALOON LEAGUE.

This meeting took place on the 11th, 12th, and 13th of January, at the Park Auditorium, Columbus, O. Right over the stage, in plain view, in beautiful large letters, so that they could be easily read from any part of the room capable of seating six thousand people, were the words,

"THE SALOON MUST GO."

The Anti-saloon League originated in Ohio; but this was the third national convention, and those who took part were from all over the United States. Perhaps I may mention here that 18 States already have Anti-saloon League organizations, and other States are rapidly following.

When I first entered the room, Rev. Walter Brooks, D. D., of Washington, D. C., was speaking. His subject was "Neal Dow." Mr. Brooks is a colored man, and I should say, of pure African descent; but when I was not looking at the speaker it seemed almost impossible to realize that such splendid oratory—such beautiful, forcible language—was not spoken by some "doctor of divinity" of our own race. It was my privilege to have some private conversation with Dr. Brooks afterward. He is not only fully up with the times, but he is capable of giving intelligent advice on almost any point concerning government, morals, or law. There was something almost plaintive, and in some respects painful, to notice that a man of such scholarly attainments seemed, in some respects, obliged to exhibit a deference to every white man, no matter how far below him in intellect and scholarship the white person might be. When I was in Florida, and, in fact, all through the South, I could not help noting the meekness and humility that even educated blacks show toward white people. When you are riding a wheel, some people will courteously give you the right of way, and some will not; but a colored man or woman, under all circumstances, will, on meeting a white person, give the whole road or the whole walk—recognizing, as if by general and universal consent, that they are by nature born our inferiors and servants.

One of the prominent banners at the Anti-saloon meeting read—

"UNITY, PERSISTENCY, VICTORY;"

and this banner suggested the three texts at the head of this report.

The first thing that struck me forcibly was the unity in this convention. Mr. Brooks' color, as he stood before our people, or mingling in the crowd in a familiar way, counted for nothing. A man's politics or religion, if you happened to discover what these were, counted for nothing. Occasionally evidence of these things cropped out; but before long somebody was sure to remind us that the purpose of this national meeting was "unity." One good brother, of great eloquence and remarkable talent, urged that, in one of the resolutions, there should be a clause to the effect that we should all agree to vote for men in public office who are strictly and earnestly temperance men, and that under no circumstances should we vote for *any other*. Now, I am afraid a part of the good friends who read GLEANINGS will come down on me hot and heavy when I say that I felt sure this well-meaning brother would stir up discord; and for a little time there seemed to be danger of a little feeling among many of the prominent members; but when Mrs. Wittemyer arose and said that "we temperance workers of the nation have come here to work for unity, perhaps more than for any thing else," the troubled sea quieted down in an instant. At the risk of receiving some more unkind letters, permit your old friend A. I. Root to say that even *he* could not well pledge himself to vote *always* for real earnest temperance officers, and for no others. No one man has all good qualities; and a good many times in my life I have felt obliged to choose what I considered the better of two alternatives—sometimes the lesser of two evils. I should be *exceedingly* glad if able men, and men who are candidates, were always such temperance men as was Neal Dow, and that the world would unite in putting such men into office.

The next speaker was the Right Rev. John A. Watterson, Bishop of Columbus. Now, if it were not for that word "Unity" in our motto I presume there were quite a few who would also object to the way in which our national president, Rev. Howard H. Russell, introduced the bishop. He said in substance: "Dear friends, I am glad to introduce to you one whom I have learned to love since I have become more and more acquainted with him in the temperance work."

There we had a Congregational minister introducing a brother-minister of the Roman Catholic Church! Please remember, dear friends, that Mr. Russell did not, by this speech, indorse Catholicism as a whole; but he did indorse the good work that our Catholic brethren have been doing for the cause of temperance; and by so doing he has brought about a wider unity in the temperance work than we have ever had before. The bishop gave us an excellent temperance sermon. Perhaps it would be well to mention right here, that, later in the day, one of the best temperance addresses I ever heard in my life was given by Mrs. Leonora M. Lake, of St. Louis, Mo., entitled "The Saloon and the Home." Mrs. Lake is a Catholic mother, and a member of the W. C. T. U. She said in substance that she did not want to discuss theology in public, and that she had no desire to enter the realm of politics; but when the American saloon, or any thing else, is striking such terrible blows at the home, she did feel called upon, in common with the mothers of America, to *protest* against the saloon; and in behalf of the home she felt willing to speak, even before public audiences. Many of our readers are perhaps not aware of the fact that our Catholic friends are very tenacious in their love of home. The divorces that disgrace the members of our various churches are almost unknown among the Catholics. I asked Howard Russell if he ever before heard of a woman speaking in public who was a Roman Catholic. I think he said he never had, and that this was an innovation on the customs of the past. Why, I felt as if I would have freely given a ten-dollar bill to have Mrs. Root listen to Mrs. Lake's plea for the sacredness and sanctity of the home, and for the boys of our land who are growing up, and going out, not only from Catholic homes but from every other home. I tell you, friends, when temperance workers from all denominations and from every political party begin to meet in harmony and real brotherhood, then we shall triumph.

Judge Pollock, of Fargo, N. D., gave an address on "The Saloon and the State." I hope you will excuse my ignorance when I tell you that I did not know before that North Dakota as a State has no saloons. I think the judge told us they never have had, although they have had some hard fights with the saloon-keepers. Judge Pollock is a godly man and an earnest Christian, even though he is a smart and successful lawyer. He said that one of the difficulties in enforcing our laws lay in the fact that the lawyers of our land, as a whole, need a good old-fashioned Methodist class meeting temperance revival. If the lawyers could be revived, he said the public officers and the Governor of the State might be expected to join in the revival very soon, especially so far as temperance is concerned. In North Dakota they punish saloon-keepers. For the first offense it is fine and imprisonment in the county jail or workhouse; and for the second offense it is the penitentiary. He said they had recently sent a man to the penitentiary for selling a single glass of whisky—at least, that was all they succeeded in proving clearly against him. He said he knew the man went to the penitentiary, because he himself made out the papers.

A lady from North Dakota followed him, whose name I am unable to give. She was not what might be called a talented orator; but, oh how the honesty and sincerity of her pure Christian spirit shone forth in all her talk! She said business men predicted that their State would suffer from the loss of trade. Along the line of an adjoining State, predictions were made that the Dakota towns would not get the business. She said she visited a large number of business places on both sides of the line to inquire into this matter. She conversed with a large number of business men who had tried it under both conditions. Now, kind friends, it is not always the *amount* of business that a grocer does that settles the question of profit and loss. In one town, when they had saloons they had to trust out until payday, for groceries and provisions; but the saloon-keeper managed to get *cash down*, while the grocer sold on time, and it seemed so everywhere. The ready money went to the saloon-keeper. When it was gone, the grocer had to trust or see the families suffer. The testimony was overwhelming in favor of no saloon from a business point of view, and the same rule holds good here in our town of Medina. I have watched our place during a period of from ten to fifteen years with the saloon, and I have watched during a like period (bless the Lord!) after the saloon had *gone*.

In a little private talk between the sessions, a gentleman from a western city — I think it was Minneapolis—said they had got so far as to have the city divided into precincts, and they had voted the saloons out of a little more than half of the city. Right here the good work seemed to stick and hang, and it was dragging so slowly that many people were refusing to live in the saloon districts. I need not tell you which side of the city furnished more criminals. Our friend said the difference in the two localities was simply wonderful—nobody pretended to dispute it. Now, if Minneapolis is not the city, let some one tell me what place it was.

I shall not have space to tell you in this paper all I should like to tell; but one of the brightest and most interesting talks was from a Mr. S. P. Thrasher, of New Haven, Ct. Mr. Thrasher said in the outset that he was not a lawyer, a member of Congress, a policeman, nor any thing but an ordinary lay worker. His talk was entitled "Enforcement of Law in Connecticut." Some years ago God seemed to call him especially toward this matter of enforcement of law. He did not say that, but *I* say it. I think God called Edison to lead all the learned scientific men in electricity. In the same way he called Moody to lead our "doctors of divinity" in preaching the gospel; for you know that oftentimes God chooses "the foolish things of the world to confound the wise; and God hath chosen the weak things of the world to confound the things which are mighty." Well, Mr. Thrasher, without any legal education, without any experience in politics, without any knowledge of the ways in which detective policemen should work, commenced working for temperance. He very soon found out the difficulties in enforcing law. Public officers told him his ideas were good and right and proper, but that they could not be carried out. If they could get one single saloon-keeper off by himself, with overwhelming testimony, they would sometimes secure conviction.* Friend Thrasher's heart was ready to burst with righteous indignation. He was, as I gathered, a man of not very much means. Who is going to furnish the money for this expensive work? He commenced at the beginning by forming a "Law and Order League." When he had a case he sounded his witnesses thoroughly. If it was a jury case he left no stone unturned to secure an honest, fearless jury. Then he managed to get officers of the law up to a pitch where they did not shirk duty. In fact, he surrounded them with earnest, honest men so they could not very well evade duty. He succeeded in getting convictions. Afterward he asked good and able men to help pay the expenses, and they did so. To make a long story short, he prosecuted 178 saloon-keepers, gambling-dens, and houses of ill-fame in the little State of Connecticut, and secured convictions in every case but 14. His final masterpiece was in attacking a gambling-den partly in Connecticut and partly in an adjoining State. They were so well intrenched, and had so much money, that the officers of the law had been afraid of them. They were desperadoes, too, and the man who meddled with them would be likely to lose his life. Friend Thrasher visited the Governor of the State, showed him his past record, and told him what he wanted to do. May I say God influenced that Governor so that he caught some of friend Thrasher's enthusiasm, and promised him all the aid he could give? He worked the case up with more time and pains than he had ever done before. He went to New York city, and secured detectives who were not afraid to undertake the job. He managed to have an officer for each gambler. The whole gang (21 of them) were arrested at once. When they recognized the situation, and discovered they were outwitted, they gracefully yielded, but managed to furnish bail. When they saw how friend Thrasher had cornered them they jumped their bail, and left $17,000 in the State of Connecticut, and gambling in that vicinity received its death-blow, as a reward for having cleaned out a thing that had been a disgrace for many a long year. Friend Thrasher has published a full account of this transaction, in a little pamphlet which he has had printed for the benefit of other States that wish to go and do likewise.* For about half an hour he answered questions in regard to the enforcement of temperance laws. Somebody asked him how many more Thrashers they had down in Connecticut. He said three little ones were all that he knew of. They were in his own home, and it was for *their* sakes he had taken up this work.

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*A little book has just been published, containing a full account of this matter. From it I extract the following from the first and second pages:

> Conclusive evidence has been produced that the gambling interests of the State were handling more than ten million dollars annually. Illegal liquor-dealers were thriving in all parts of the commonwealth. Houses of prostitution were flourishing along the streets of our cities and highways of our towns. The vilest sort of obscene literature was being distributed, apparently without fear of punishment. Those interested in these different lines of evil-doing appeared to have joined forces, thereby forming a powerful alliance against law and order.

The next session of the Anti-saloon League will be held in Cleveland, some time next December. I will see that you are informed of it in time if you want to go. Meantime hunt up the organization in your own State; get into the harness, and help pull, and may God give you "Unity," "Persistency," and, finally, "Victory."

NOTES OF TRAVEL

BY A. I. ROOT.

After the session of the Anti-saloon League, while waiting for a train I went over to the State University. I first gravitated toward the greenhouses for growing vegetables under glass. As usual, the largest building was filled with a beautiful crop of Grand Rapids lettuce. The man in charge told me the demand was ahead of the supply all the time. The plan of growing it is not much different from what I have described heretofore. The seed is started in little trays, or flats. The sides of these trays are made of stuff about an inch square. I suggested that such boxes are heavier to handle than they need to be; but the attendant explained that the bottom was made entirely of lath, with spaces between the lath. The soil is, therefore, only an inch or so deep. Whenever the plants need watering, the tray (plants and all) is set in the water-bench. When well soaked it is set out, and the open bottoms made of lath give most perfect drainage. The plants from these little trays are set out in other trays about two inches apart. These are treated and watered just like the others until they begin to crowd; then they are set into large beds, where they make their full growth, about seven inches high from center to center. For spacing in the boxes, at first transplanting they use a board with pins set in at right distances. Each tray holds about 70 plants, if I am correct.

Some of the boys who have been in our employ are now students at the University, and I was told their recitation would be over at just ten o'clock. As the recitation closed I had the pleasure of meeting them. It was in the geological or museum building; and our veteran friend Prof. Orth, together with the boys, proceeded to show me some of the recent "finds" from our State of Ohio. First and foremost, for it is the most conspicuous thing in the whole great building, was the skeleton of a "mastodon," found in one of our Ohio swamps a year or two ago. While this is not the largest one in the world, it ranks fairly with those in different collections. Prof. Orth told me there was a singular circumstance connected with the finding. When the monster's jawbones were discovered and pried out, farmers and others in the neighborhood began smashing them up with axes and crowbars to get the huge teeth. When somebody notified him, and he went in behalf of the State to get the valuable find, he had great trouble in hunting up all the teeth that had been carried away, and even though he offered large prices for them. The whole skeleton is worth to the State four or five thousand dollars, and it was a great deal of trouble indeed to hunt up the pieces and put them together so as to make good the damage done by this thoughtless sort of vandalism. It seems strange that there should be such stupidity among our people. If they would visit our experiment farms and State University a little more they might possibly learn some valuable lessons. Of course, the State paid every person for his particular piece; for such things belong, I believe, to the finder, respecting, of course, the rights of the person on whose land the discovery was made. Now, they did not find a complete skeleton in that swamp, although they found a large number of bones that in all probability belonged to that individual animal. Bones, tusks, and teeth have been picked up in different parts of the State, indicating that this was the feeding-ground of these great creatures away back, perhaps before man set foot upon this soil. They collected as many bones as they could, that had been found, as I have told you, and then supplied the missing ones as nearly as our best scholars and professors could figure out how they probably were. I asked a multitude of questions, and was surprised that so many of them could be answered. He was a vegetarian in his diet, living on branches and leaves of trees.

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*The following is another extract from the little book I have mentioned:

Just before the Willimantic fair of last year, the Willimantic Christian Endeavor Union appointed a good citizenship committee, with instructions to co-operate with the Law and Order League, with a view of preventing, if possible all gambling games and immoral shows in the fairground. Our secretary and a force of detectives went to Willimantic for the purpose of making investigations, and entering complaints against law breakers, if it became necessary. In some way it was known, or least suspected, that the agents of the League were in Willimantic, and between twenty five and thirty professional gamblers left the city before the fair opened. Nothing objectionable occurred in the gambling line until about noon of the second day, when our agents reported that five games were in operation. Our secretary, in company with the president of the Christian Endeavor Union, visited the fairgrounds and warned the proprietors of the five stands that they would be arrested if they continued their games. In thirty minutes they had pulled up stakes and left the ground.

Any who wish a copy of this pamphlet can have it by addressing S. P. Thrasher, 82 Church St., New Haven, Ct.

"Would you like to see what he partook of for his last meal?" I was asked.

"But, can you tell?" I replied.

"Oh, yes! we can tell you. Come this way."

Then the professor showed me a basketful of chewed-up sticks, apparently; but they were the petrified remains of the sticks, and very likely they were the contents of his stomach when he got "swamped" in that muck-bed. Why don't we have mastodons now? Well, climatic changes may have had something to do with it. Environments have changed. Did God make elephants, mastodons, and every other animal we have now, and all those that have lived on the earth since the morning of creation? Probably not. Our fleet, slender-limbed race-horses and our huge Clydesdale roadsters are almost as different from each other as are mastodons and elephants; yet the two kinds of horses, without doubt, had a common origin or parentage. In fact, animals are changed in form and weight to suit the wants of man, even during the span of one single human life.

In the dairy buildings I met some more Medina boys, and I was agreeably surprised to find one of our veteran bee-keepers, Mr. H. J. Noyes, of Richland City, Wis., installed as teacher or professor of scientific butter and cheese making, if you choose. The new dairy building is a very handsome structure, and the walls of the building inside are made of milk-white enameled tiling or brick. Every inch of it can be kept as clean as a new dinner-plate, and the boys are expected to keep it this way. The members of the class are all neatly attired in white canvas overalls and jackets. They also had white caps, and I presume they are expected to *keep* them white and clean. And a nice lot of boys they were. If I were a girl, and wanted to get acquainted with some of the nicest boys there are in the whole State of Ohio, I think I would visit that dairy building. It used to trouble my conscience a little because I took more interest in a class of nice-looking girls than in a similar class where they were all boys. Well, now I am either getting older or else the boys are getting nicer, or may be both, for I enjoyed shaking hands with those boys, and looking into their faces, and watching their movements, as much I ever enjoyed being with any class of the opposite sex. Let me digress a little.

When I first came on to the grounds I stopped in mute wonder to look at the beautiful architecture of a new building, or, rather, pile of buildings, that is just in process of erection on the University grounds. Nobody said so, but I should call it Moorish architecture. Perhaps I got the idea from the great hotel at Saint Augustine, Florida, which is built on this type. I think I never saw so handsome a building before in my life — I mean this Ohio building, for it is all *real* work and real stone. There is not any whitewash so as to make pitch pine look like solid masonry. All that marred my enjoyment in looking at it was to think of the tremendous expense that it must have entailed on the State. It is built for a gymnasium. Well, the dairy buildings are equally fine, although, of course, they have not the ornamental work about them. How shall our State of Ohio get this money back? Well, I think I can understand this part of it. Those boys are at work with the best apparatus for making butter and cheese that the world can furnish. In fact, they are testing the work of all prominent manufacturers. They are also learning the very best and latest methods. You have all heard more or less about the "creamery shark." May be *some* of you have had *your* fingers burned. This swindle is worked by having some sharper induce the farmers to combine and set up a creamery. They charge the farmers two or three prices for the apparatus, giving them something that is not the best, then put in a manager who swindles them again, and so on it has been swindle from beginning to end. Now, our State University is going to stop this whole business. Our Ohio boys—boys reared in good honest homes on the farm — are becoming posted. They learn at this State institution what such machinery is actually worth; then they know just how to make it do its best. The farmer can not be swindled, because *his own boy* has charge of the thing. The boy is educated to the business, and knows at a glance when the sharper tries to take advantage of him. Our State of Ohio is abundantly able to furnish good machinery; and not only that, but handsome and attractive surroundings for the schools where our boys are being educated. Another thing, sometimes it does not cost any more to make a handsome and imposing structure than it does to build an awkward and misshapen one. Some of these new buildings appealed to my love of the beautiful like strains of sweet music, like beautiful flowers, or like the hum of the bees. If money is wasted no more foolishly in any part of our State than it is on the University grounds, I say, "May God be praised." An honest Christian boy, educated at our State University, is worth a hundred of the sort that grow up amid the surroundings of the saloon, with the tobacco and whisky element for accompaniments; and in time to come I expect them to utterly route the whole whisky ring, not only from business places, but I expect them to fill the important offices of State and nation.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

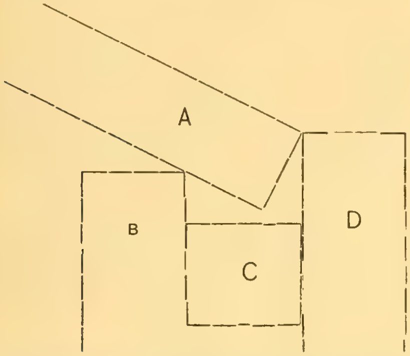
GARDENING FOR PLEASURE (?)

Some of the friends have thought I presented a little too much of the pleasant features of gardening—especially gardening under glass. Well, I will give a little of the other side this time. The greater part of January has been very warm; in fact, the whole week from the 16th to the 23d was almost without frost. Saturday night the barometer dropped "way down." As the Weather Bureau said "rain during the night," and clearing off the next day, I thought we should have a tremendous rain. Instead of that it was a tremendous *blow* Before daylight I felt very uneasy about our sashes. I have never fastened them down, as many gardeners do, as I have always claimed that the expense of fastening them every time they were handled would cost me more money than to repair those blown off by an occasional high wind. But this time the wind came in terrible gusts. It blew "great guns," as the sailors say. About as soon as I could see, I was out Sunday morning for a survey. Sure enough, two sashes were out of the west side of the greenhouse, and lay away off in the garden, with every glass smashed out. I hustled Huber out of bed, and we two got some sash in, in place of these. By the way, all the sash in the greenhouse are usually fastened in with screws. In our special plan of a greenhouse, the glass overhead is permanent; but on each of the four sides it is removable for convenience in getting in manure, working crops, etc. These two had been taken out because it was easier to transplant some lettuce in that way. When they were put back the boys had failed to fasten them. I let Huber go back to the house, thinking I should not need him further; but I waited, hoping the wind would go down. The barometer, however, gave me no encouragement. I busied myself by placing heavy stones on the sash most likely to be moved; but finally a tremendous gust came and almost stripped the fifty-foot bed just fronting the roadway. It looked funny to see those 3x6-foot sash flying in the air like a lot of feathers; and it looked *still* funnier when three or four of them crashed through the greenhouse. For a time I thought said greenhouse and contents were doomed to destruction. The wind let up a little, and I wanted help badly, but I didn't dare to leave to go after any. But it was too early in the morning for anybody to be up. I tried to handle our light wooden shutters so as to protect the greenhouse from the blasts which were now coming more from the west, and they were also beginning to get freezing cold. Just in the nick of time our teamster, who weighs something over 200 lbs., came along. When I undertook to handle a light shutter it made me think of the flying-machines that are now being used successfully to let a man "glide" down a steep hillside. I pretty nearly glided out among the glass sashes where I did not want to go. When the heavy teamster caught hold of them, however, he handled them something as he does the Clydesdale team when they have had rather too many oats. With Mr. Bowman's help we got the greenhouse covered with sashes, with a big stone on each sash, so our plants were tolerably safe.

By this time Fred and Frank got around to take my place while I went home for a nine-o'clock breakfast on Sunday morning. In fact, I was more tired out than I have been on any week day for some time. I managed to get a nap after breakfast, however, before time for church. We had a grand sermon from Bro. Mattson, as usual; but, unfortunately, my mind seemed to dwell on the spectacle of those flying frames of glass. Again and again I pulled it back to the sermon; but it was something like carrying a shutter in the wind. Now, I *tried* not to do any inventing—especially during meeting time; but the thing *would* "invent" in spite of me—at least I am afraid it invented to some extent on Sunday, and here it is:

HOW TO KEEP YOUR SASHES FROM BEING BLOWN OFF BY THE WIND WITHOUT THE NECESSITY OF HOOKING THEM FAST.

In our locality our heavy winds are almost all from the southwest, veering around toward the west. Well, there are at least four long beds out in the garden, where not a sash was moved. Right during the tumult I kept wondering why none of these sashes caught the wind, and I discovered the reason. Owing to some changes in the make-up of the bed, a strip of wood was left in front that reaches up a little above the sash right down where the eaves come. This absolutely prevented the wind from catching under the eaves to start them up. The arrangement is not a very good one in one respect; for during a heavy rain the water comes down inside of the bed, where it is not wanted. All surplus rain water should be carried over outside of the bed. But this can be managed by having this front board that comes up on the south side kept away from the plank inclosing the bed, by strips say ½ inch thick. This will let the rain water go down outside of the bed. The sash may be pushed down so as to come tight against this board. An objection may be made that you can not catch your fingers under the eaves to lift your sash. This objection, however, is trifling, for two people are needed to handle the sash. The one on the north side raises his part first, draws it back a little, swings up one corner, and his companion then takes hold. The sashes can be handled almost as easily as if this strip along the eaves were not in the way. At the west edge of each bed the end board should rise above the sash-bar so the wind can not get under there; and the sash should always be all *on* or all *off*. Be careful about having them tilted for ventilation when there is danger of a heavy wind. Perhaps the diagram below will make it a little plainer.*



A, side-bar of sash; B, plank on south side of bed; C, block to hold "wind-board" away from B; D, "wind-board" nailed to C, for A to strike and keep off wind.

If the sash are made as many of them usually are, with heavy side-bars reaching down a little below the cross-piece of the bottom of the sash, when these side-bars strike the strip of board that cuts off the wind there is room for the water to run down the glass and fall on the ground, and there is also room to catch hold of the lower edge of the sash in handling. This extra board will probably be worth all it costs, to keep out frost from the side of the bed.

FARM GARDENING, ETC.

Mr. Root:—I write to tell you how much help I have gotten from your little talks on high-pressure gardening and your sermons. How eagerly I await each number of GLEANINGS! I have been combining farming, gardening, bee-keeping, and dairying on a 70-acre farm which was in very bad shape when we came. My hired help has received all the cash I took in. Seasons were bad, crops poor; but we are putting ground in good shape. I trust I shall succeed better the coming year, as I have greater faith in God, and try to work according to your teachings.

My soil is a poor hard clay on hill ground; has not been in wheat for a long time; heaves out plants in winter. A 16-acre field is now barren. When would you advise plowing, to sow in oats and clover? when to turn under to make good soil? It drains easily; can not stand drouth. What is the best thing to do with it? It will not bring corn.

There is a large sawmill here that runs all the waste wood into a huge furnace 100 ft. high and 25 feet in diameter. Every Saturday they clean it out, throwing out 10 or 12 two-horse wagon loads of ashes which are sold for 35 to 50 cts. a load. Would you advise a coating of these ashes, and tell me what crops they are good for? They are wet when thrown out.

Your transplanting-tubes are fine, but they cost too much. I set out 5000 tomato-plants by your process this year. I take two or three boys to town in a large wagon, and we go through alleys and to old dump-holes and get all the tin cans we can find. The boys think it's fun. We take them home, kindle a fire in an old stove, and get the top redhot; set on our cans, and in a few minutes the solder melts, and, with a few taps of a small stick, the end drops off, leaving a nice cutting edge to shove in the ground. In this way I got about 800 nice transplanting-tubes without paying out a cent. I believe many readers of GLEANINGS will hail this kink with delight These cans are better than tubes, as tubes will cut your hands when shoving into the soil, while on tin cans the end cut open by the consumers of the contents is trimmed round with an old pocket-knife, leaving ⅛ inch margin of lid to reinforce the sides and preserve its shape. Any one living near a city or town can get a wagonload in an hour or two. J. C. WALLENMEYER.

Evansville, Ind., Nov. 30, 1897.

On most soils ashes will pay, without question, friend W. Before investing very much in them, get a few loads and run them on strips through your ground. Put them on pretty heavy. On your first crop you can tell what effect the ashes will have. Spread them in the same way on clover and grass. They are almost sure to produce a good affect. Of course, much depends on what kind of wood the ashes are made of. If plants heave out on your clay soil, it is pretty good evidence that it needs underdraining. In fact, underdraining is at the bottom of every thing to get your ground in good order. If your ground has nothing on at all, you can plow it any time in the winter when it is in proper order. Leave it just as the plow turns it over, and let the frost work it up; then, when it is dry enough in the spring, fine it up and put in your crops. I think cow peas would be a splendid thing to get such ground ready for clover. Ashes will be tiptop for corn, and for potatoes also, if they do not produce scab. You can tell by trying. One great trouble with the gardening business is in getting competent help without having to *pay* too much. Your home-made transplanting-tubes, if they are handled carefully, will do excellent service.

SWEET-CLOVER SEED—GATHERING IT WITH AN UMBRELLA, ETC.

I contemplate putting in some acres of sweet clover as an experiment and educator along that line, believing that it is destined to become popular as a forage for stock as well as bees. I have tried twice by sow-

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**Jan. 26.*—Since the above was written I have had a chance to fix some of my beds as shown in the diagram, and also to test their value. A day or two after the blow mentioned, we had another one almost as strong; but I was watching the barometer closely, and knew what was coming. It dropped clear down to 28 inches in our locality. The bed where the sashes sailed so beautifully was surrounded with strips of eight-inch pine boards. In every other respect the sashes were on just the same—not one was moved. A barometer, under such circumstances, will pay for itself a great many times. We fixed our other beds by picking up old boards long enough to reach across several sash, weighting the board down with a big stone or two. In this way not a sash was moved. The barometer did give warning on the first occasion, but most of the dropping was after dark. In correspondence with the Weather Bureau they tell me the fall of the mercury was almost unprecedented. Our readers have by this time, without doubt, read of the terrible disasters caused by this same wind on the night of the 22d of January, and morning of the 23d. Any one who has much property liable to be damaged by wind can hardly afford to be without a barometer. I have for years been in the habit of giving the man, who has charge of our lumber-yard, notice of the coming of heavy rains, and especially heavy winds; and considerable losses have been averted by fixing things beforehand ready for the blow.

ing in spring, and failed in both instances. If I try again I will scatter seed on the snow. By the way, inquiry was once made in GLEANINGS as regards the best method of saving the seed. I once gathered a bushel in two hours by pushing an inverted umbrella up close to the stalk, and an assistant bent the tops over it and beat off the seed with a stick.

Bedford, Ohio, Jan. 3. J. B. HAINS.

There certainly is something strange about the difficulty of getting sweet clover to germinate. Our experience is that, where it drops from the stalks on to the ground where it grew, it will come up in great profusion. We have never known this to fail, even on the hardest ground, and there it grows the best. Can somebody tell us more about it? I think, friend H., you must be a Yankee, or you would not have thought of using an umbrella for gathering seed. Our plan was to spread a large sheet over the wagon-box, then cut the stalks as carefully as we could, and thrash out the seed on the sheet. But a great deal dropped off on the ground, which we could have saved by your umbrella arrangement. I would suggest shaking off what you can in the umbrella, and cutting the stalks and thrashing out the rest. It certainly is proving to be a valuable plant in many places, or we should not be selling the seed every year by the ton.

AN OHIO BULLETIN ON WEEDS.

I have been greatly pleased to look over a bulletin of about 150 pages describing and illustrating the weeds of Ohio. It comes from the Experiment Station, Wooster, O., and is by Prof. A. D. Selby. Almost every weed is so plainly pictured that the average farmer will recognize them at a glance. Then their habits are described, and the best methods of eradication suggested. I hurriedly looked up the weeds I had become familiar with, and was greatly pleased to see that they had come to about the same conclusions I have. A great many times, time and strength are just about wasted because we do not go at the work in the right way. For instance, we read:

> Weeds that are "indicators," i. e., diagnostic of soil conditions, are most cheaply controlled by removing the condition. Drain wet places to avoid sedges, apply lime or fertilizers to crowd out sorrel.

You see, thoroughly draining a piece of ground will of itself, while helping a crop, often do away with certain kinds of weeds; or the application of lime may benefit a strawberry-patch, and at the same time wind up the sorrel nuisance entirely. Again:

> Some weeds may be eradicated while others may be only subjugated. Canada thistle is often eradicated in a particular spot, while for prickly lettuce this is a recurrent problem everywhere. The latter can not now be eradicated, while it may be subdued.

And so it is all through the book. Every person who has any thing to do with farming or gardening should send to Wooster, O., for Bulletin No. 83. If you are outside of this State, they will probably tell you how to get a copy. Why, if this bulletin were in the hands of every cultivator of the soil, and thoroughly studied, it would be worth millions to our State.

HEALTH NOTES

BY A. I. ROOT

THE OHIO DAIRY AND FOOD COMMISSION AND THE PATENT-MEDICINE MEN

I said to myself, "May the Lord be praised!" when I first had notice that our Ohio Food Commission had taken hold of the matter and made investigations in regard to the character of patent medicines. Let me quote briefly from Bulletin No. 2, dated Dec., 1897, from Columbus, O.:

> Numerous complaints have been made to me as to the terrible effect of certain preparations known as patent medicines, and I have, for several months past, conducted a very careful examination into this line of goods. The amount of dangerous narcotic drugs and active poisons sold in this way almost passes belief. In recent years preparations have appeared on the market for the cure of various complaints, notably catarrh, the sole remedial value of which appears to be the use of hydro-chlorate of cocaine or morphine, sometimes both. The effect is simply to drug the victim into fancied security by giving temporary relief, and completely and utterly destroying the mental, moral, and physical nature of the persons using these dangerous mixtures.
>
> I have begun proceedings in a number of cases to compel the proper labeling of these drugs in order that the consumer may be advised of their extremely dangerous nature. I have sought to compel the manufacturers and dealers to attach the poison label to these preparations as required by the label law of 1890. Out of the seven prosecutions made, four have plead guilty up to the present time. Of the three remaining I expect very interesting contests on account of the great financial interests involved, as some of the manufacturers have openly boasted of their intention to fight and make it "hot" for the Commissioner. They have succeeded in arraying a few newspapers against the Department by misrepresentation and the threat to withdraw advertising patronage. I am pleased to note, however, that the vast majority of newspapers refuse to be influenced in this manner by people who have grown rich by destroying the health, happiness, and even the lives of innocent people who are induced to take these vile preparations under the assurances that they contain no dangerous drugs. The moral principle is so evident in these cases, that I am surprised that any fair-minded person would have the assurance to insist that they have the right to drug people into a state of insanity, while pretending to cure some ordinary complaint.
>
> It is my intention to ask for legislation to strengthen the statute referred to on this question; and the statute governing the prescribing and the sale of poisons should, in my opinion, be so amended so as to forbid the re-filling of any prescription containing cocaine, opium, or any of its salts, chloral hydrate, or arsenic; and there ought to be a law forbidding the sale of these drugs except on the prescription of a reputable physician.

Now, friends, let us stand by our officers who are trying to enforce the law. If you want to know all about the different kinds of food and medicines we use, and their adulterations, write to J. E. Blackburn, Dairy and Food Commissioner, Columbus, O.

THAT ELECTRIC FLASH-LIGHT LAMP.

The portable electric flash-lamp I spoke about some months ago does not hold out. It worked well for about a month. Seventy-five cents for a set of dry batteries once in thirty days is almost too expensive. There has been nothing yet made to answer the purpose that I know of, unless it is the storage battery; and this can not well be got down under six or seven pounds, which would make it too heavy to carry about.—A. I. R.

WONDERFUL RECIPES FOR A SMALL SUM OF MONEY.

Here we are again. One of our subscribers sent us the following slip clipped from a paper:

Honey Without Bees. With my recipe you can make artificial honey that your friends can not tell from genuine. Better than any syrup for pancakes and general table use. Recipe and full directions for 12 cents.

Delicious Maple Syrup without use of the maple-tree. For 12c I will send recipe and full directions by which any one, anywhere, can make delicious maple syrup at a cost of 30c a gallon. Both recipes 20c. JNO. T. STEPHENSON,
3712 Evans Ave., St. Louis.

Of course, we sent the money promptly, and here is what we got:

TABLE MANNA, OR PRIZE HONEY,
WITHOUT BEES' HONEY.

White sugar, 5 lbs.; water, 1½ lbs.; simmer gradually over the fire and add one-fourth ounce alum in powder; skim off the scum, if any; set off to cool, adding a small quantity of the following extracts to flavor to suit the taste:

Extract for flavoring honey: Alcohol, one ounce; good Jamaica ginger, two ounces; let stand for ten days, adding three drops of ottar of roses to scent.

DELICIOUS MAPLE SYRUP,

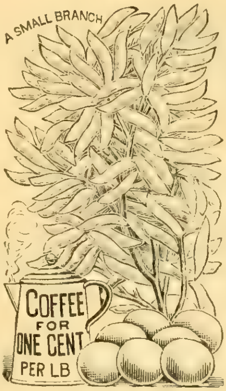
or maple syrup without the use of the maple-tree. To make one gallon: Take one peck of corncobs, adding water to cover; then boil one hour; strain, and add five pounds of dark brown sugar, boil to one gallon. You may add more sugar if you like, but do not add any more of the corncob extract, and do not use cobs too fresh—they should not be used till in December.

A few days ago, while traveling on the cars a gentleman told me that a Methodist minister had invented a process of getting the essential oil from the maple-tree so that, when added to pure sugar syrup, it made the most beautiful syrup in the world. The whole tree is cut down and chopped up and distilled, the same way they make peppermint and wintergreen oil. This maple oil then gives the beautiful maple flavor to pure syrup. Well, when I read the above recipe I thought may be it would tell us how to get the extract of maple right out of the tree; but, dear me! what a drop! Instead of a maple-tree you are to take corncobs, and old ones at that; and instead of pure sugar syrup you take dark brown sugar; I suppose this will also help to give it the "maple flavor." Well, now, friends, even if I have paid my money, I think I will take syrup made from *granulated* sugar at least; and, if you please, "in mine" I shall leave out the peck of corncobs. "Cob extract" indeed! I wonder if this is not going to be a new article of commerce.

Now, this is not *all* of the recipe business. Along with the above, in the same envelope, comes a sheet advertising "The Silent Friend; or, Marriage Guide." And, by the way, if you undertake to follow up this recipe business, sooner or later you will find it runs into something low-lived. If I am not mistaken, this Marriage Guide was ruled out of the mails years ago. Perhaps we had better notify the postmaster at St. Louis of what is going on.

FOR SALE.—One-half interest in five hundred colonies of bees. Good opportunity for a man with some money. Finest location to be found in the alfalfa district. JOHN A. HARRIS, Harris, Col.

NEW DOMESTIC COFFEE BERRY.



You can grow your own coffee for 1 cent a pound. It is the poor man's friend, and rich man's delight. Nothing ever found to compare with it. Perfectly delicious; thousands prefer it to real coffee. It is a great health-saver, being nourishing instead of stimulating. Millions are seriously injured by store coffee; let it alone, and save $10.00 to $25.00 every year. The Domestic is better, very easy to raise, bears prodigiously—almost a solid mass of pods; grows well in any soil or climate, and ripens everywhere early as corn. Two crops a year may be grown in the South. It is the most nutritious of all vegetable products. Prepare same as other coffee, and you will be surprised and delighted to find how good it is.

A FEW EXTRACTS FROM HUNDREDS OF TESTIMONIALS.

"Better than 30-cent store coffee."—Dr. J. M. Ashby.
"A most wonderful discovery."—Christian Advocate.
"My crop averaged 140 bushels per acre."—J. W. Adams.
"I prefer it to the genuine coffee."—Prof. R. J. Harrell.
"The whole country has been to see it."—J. Campbell.
"More healthful and better than real coffee."—A. I. Root.

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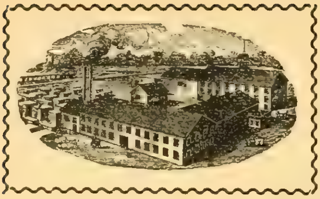

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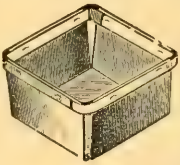

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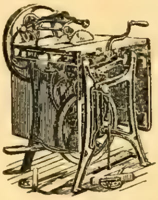

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HONEY-JARS, 1-lb., square, with corks, $4.50 a gross; discount on quantity.

Catalog free, giving discount for early orders.

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QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.

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Good Looks, good health and money saved—all secured by growing and using the new Coffee. It ripens in 100 days. See A. G. Cook's advt., page 109.

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Gent's wheel, belonging to E. R. Root; long cranks, pneumatic saddle, large tires, 70 gear, cycloidal sprockets, finished in blue; very easy running; as good as new, nearly. $30.00.

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Belonging to J. T. Calvert, 6¾-inch cranks, large tubing, flush joints, divisible cranks, cycloidal sprockets; ridden but little. $30.00.

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Belonging to A. I. Root—the easiest-running wheel, he says, he ever owned; wood reversible bars, clincher tires, keyless cranks, large tubing, flush joints; in fine running order. $42.50.

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Belonging to E. R. Root, made by the Remington Arms Co.; ridden but little, not over 50 miles all told, and almost new; long cranks, wood handle-bars, large tubing, long reinforced drop forgings; in fact, the strongest and most rigid tandem ever built, for only $55.00.

The Rootville folks always buy the latest bicycles every season; and, desiring to be strictly up to date with all the latest improvements, we offer our wheels cheap. If you want one of these bargains, speak soon. Catalogs and fuller particulars given on application. Honey taken in exchange for any of the above wheels.

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It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog free.

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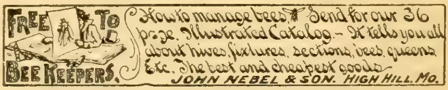
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Dovetailed Hives,

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To all new subscribers, and also to those who renew before their subscriptions expire, and inclose $1.00, we will send the *Busy Bee*, a monthly bee-paper, in addition, free.

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P. K. illustrator No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $1 we will send these 4 papers one year and 4 books, postpaid, grand total	$3.60

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

SPECIAL NOTICES BY BUSINESS MANAGER

CARLOAD SHIPMENTS.

At this time last year we were loading the fourth car of bee-keepers' supplies for the season of 1897. We have already shipped ten cars so far this year, and, as we go to press, are loading two more, and have orders booked for eight more cars which should be shipped promptly. We expect to ship these and four or five more we are looking for during this month. Since our last report we have shipped our first car for the season to Jos. Nysewander, Des Moines, Iowa, and the first to W. S Pouder, Indianapolis, Ind. We have also shipped a large carload of lumber for special English hives for Jas. Lee & Son, London, Eng., besides a car of bicycle-crates and another car of health-food boxes. We are loading the first car for John Nebel & Son, High Hill. Mo., and the second car for D. M. Edwards, Uvalde, Texas. These will be followed by a car to each of our branch houses, one to Vickery Bros., Evansville, Ind., and to Geo. E. Hilton, Fremont, Michigan.

BUSINESS AT THIS DATE.

Judging from the orders and inquiries we have been and are receiving, the trade in bee-keepers' supplies this season bids fair to exceed any former record. We have been working steadily ten hours a day ever since the close of last season, stopping only for the necessary repairs. We have a large stock of many kinds of goods accumulated, and are at least a month ahead of last year in supplying outside points. Many people are more forehanded than they have been in former years, so that we are having plenty to do, and, so far as we can learn, other manufacturers are busy with orders. We have mailed catalogs to our GLEANINGS readers, and will get around to our other names as soon as possible. We have also printed our wholesale lists, and mailed to the dealers on our list.

In view of the present crowd of orders, and the prospects ahead, we advise all bee-keepers to make up their list of requirements early, and get in their orders, and avoid the rush and possible delay and disappointment later on.

PLAIN SECTION-HOLDERS ONLY 17½ INCHES LONG.

Some questions have been raised as to why we did not make the plain section-holders the same length as the old ones, 18⅛ inches, instead of 17½ as we do make them. 'Some have objected to the change because the old and new section-holders can not be used interchangeably in the same supers without either nailing in or removing the beveled cleats. Others have questioned the wisdom of leaving a space between end of super and end of section-holders. We did not adopt the change without weighing all the evidence carefully. We have studied for some time to find a way to avoid putting so much wood into the ends of section-holders, and we had decided on a change before the matter of plain sections and fences arose. We were going to make bottoms the same length, and grooved on the sides similar to the old all-wood top-bars, just right for ¼-inch ends, the bottoms projecting five-sixteenths inch beyond to rest on the tin strip. When the matter of plain sections and fences came up we decided that, instead of projecting the bottom, we would use the beveled cleat so as to shorten the separator. If we made the section-holder ends nine-sixteenths thick for plain sections the end cleats on the fences would have to be ⅞ wide instead of ½, as now, and it seemed to us that all this extra wood on both section-holders and fences was worse than useless. An air-space between the super and section-holder ends is better protection than wood. Bees will not propolize here to any extent, as the space is too much isolated for them to work in. The extra space affords better opportunity to handle the fences and section-holders. There is really no occasion for using the two kinds of section-holders interchangeably in the same supers, because they are so radically different. Because of this very fact, in connection with other reasons, we thought it the best time to make the change in length. The old supers and section-holders can, without much work, be changed to the new length by adding the beveled cleats and shortening the section-holders at each end.

Special Notices by A. I. Root.

ONION-SETS.

We just learned from the Landreths that their great crop of Danvers onion-sets is already all sold out, and there is such a call for onion-sets in general that prices in the East have advanced to three or four dollars a bushel. The western people have either not "caught on" to the advance or else they do not ask so big a price anyhow, because their sets are grown on cheaper land. For immediate orders we can ship promptly at prices given in our abbreviated seed list, on page 76. But we can not agree to hold to these prices except for immediate orders.

EGYPTIAN ONION-SETS AND PLANTS.

Last fall the price was so low on these that we did not gather them all, and quite a few dropped off and fell on the ground, and took root as soon as the rains came, and now they are nicely sprouted, and have nice bushy roots. As onion-sets can not usually be furnished of this variety at this time of the year, we have decided to furnish plants. We can send you very nice ones at the rate of 15 cts. per 100, or $1.00 per 1000. As they are so much larger than the common onion-plants, the price will be 10 cts. per 100 extra for postage if wanted by mail.

FORTY YEARS' EXPERIENCE WITH SWEET POTATOES.

The above is the title of a little pamphlet by Waldo F. Brown. Friend B.'s well-known ability, not only as an agricultural writer but as one of our best live workers in our farmers' institutes, is a sufficient guarantee of the value of the book. It has been heretofore sold at 20 cts.; but we will mail the pamphlet for 10 cents, postpaid; or it will be presented to every customer who buys of us sweet potatoes to the amount of 40 cts. or over. The information it contains is worth far more than it costs to any one who raises only a few in his garden. Not only does it tell all about making the beds to raise plants, and that without the use of glass, but it tells how to keep potatoes over winter, how to cook them, etc.

PRICES OF CLOVERS REDUCED.

In place of prices given in our seed catalog sent out in the fall, read: Medium clover and mammoth, or peavine, either one, bushel, $4.00; ½ bushel, $2.25; peck, $1.25; pound, 10 cts. If wanted by mail, add 10 cts. per lb. for postage and packing.

Alsike clover will be $5.00 per bushel; ½ bushel, $2 75; peck, $1.50; pound, 15 cts. If wanted by mail, add 10 cts. per lb. for postage and packing. This includes good seed carefully cleaned. We have had some experience with clover seeds, and we have one of the very best mills for recleaning. Seeds mixed with the seeds of dangerous weeds, and other trash, may be offered a trifle lower than the above prices.

Also a decline in alfalfa to $4.50 per bushel; $2.50 per ½ bushel; peck, $1.30; pound, 10 cts. By mail, 10 cts. per lb. extra.

OUR PUGET SOUND WAKEFIELD CABBAGE SEED AND CLOVER SEED.

For prices of these see our abbreviated list of seeds on page 76. See also the following from H. A. March in regard to our cauliflower seed for this year:

A. I. ROOT:—I send, as ordered, 10 lbs. of "stock seed" Early Jersey Wakefield; also 1 lb. of Early Snowball cauliflower seed, Puget Sound strain. I have worked this strain for 14 years, saving each year the most perfect heads for stock seed, and I feel safe in saying that this strain of cauliflower will give a larger per cent of PERFECT HEADS than any other strain of cauliflower on the market in the world to day. This is a strong assertion; but I have the reports of 22 experiment stations to back me and more promised. I send a couple, one from your own Ohio station.

"MR. MARCH: Both varieties of cauliflower seed received from you last spring were entirely satisfactory. The seed had a high germinative power, and the plants are remarkably uniform and true to type. I consider your cauliflower seed as equal to the very best in the market. I have tested nearly all of the best varieties and strains; and if there is any better than yours, I don't know who has it.

"W. J. GREEN, Horticulturist.
"Agricultural Experiment Station, Wooster, Ohio."

Fidalgo, Wash. H. A. MARCH.

Catalog Free. A. I. Root Co.'s Goods
for Missouri and other points, to be had from
JNO. NEBEL & SON, HIGH HILL, MO.

BURPEE'S FARM ANNUAL FOR 1898
The Leading American Seed Catalogue.
THE BEST SEEDS THAT GROW, at lowest prices.
TWENTY-ONE GRAND, NEW NOVELTIES for 1898, which cannot be had elsewhere.
This handsome new book of 144 pages is **mailed free** to planters everywhere. **Write to-day.**
W. ATLEE BURPEE & CO., Philadelphia.

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Ours is The Most Complete Department Nursery in the U. S.
Can supply all your wants from **Flower and Vegetable Seeds to Street Trees** at low rates. We publish one of the leading Seed, Plant and Tree Catalogues issued, which will be mailed **free.** Send for it now, it will save you money. Try us, can refer you to customers in every state and territory in the Union. 43 years of square dealing has made us patrons and friends far and near. Have hundreds of carloads of
FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS. We send by mail postpaid, Seeds, Bulbs, Plants, Roses, Small Trees, etc. Safe arrival and satisfaction guaranteed: larger by express and freight. 44th year, 32 greenhouses. 1000 acres
STORRS & HARRISON CO., Box 151 Painesville, O.

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$100 for 25 cents.
AND FIVE MINUTES WORK.

WE want the names of your neighbors who buy seeds, and, if you will send us the addresses of five persons whom you can recommend as being interested in gardening or flowers, we will send you the following assortment of seeds worth $1.00 for only 25 cents:
Market Gardeners' Beet, Washington Wakefield Cabbage, Pink Aromatic Celery, Astro Cucumber, 30 varieties of Lettuce, mixed, Iowa Mastodon Musk Melon, Canary Island Onion, Improved Guernsey Parsnip, 40 varieties of Radishes, mixed, Honor Bright Tomato, Snow Ball Turnip and New Rainbow Pansy. Total, 12 full sized packets, making a complete garden supply, value $1.00, for 25 cents and the five names. Large, beautifully illustrated catalogue free to all. Mention this paper when writing Address
IOWA SEED CO., (Established 1871,) **Des Moines, Iowa.**

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1,000 PEACH TREES one year from bud, two to three feet, mostly branched, with freight prepaid to any station east of Mississippi river for $19.00; or 500 for $11.00. Sample prepaid, 25c. Other sized trees proportional prices. R. S. JOHNSTON, Box No. 43, Stockley, Del.

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Honey Column.

CITY MARKETS.

CINCINNATI.—Demand is slow for extracted and comb honey. We quote comb honey, 10@13 for best white, and 3½@6 for extracted honey. There is a fair demand for beeswax, with a fair supply. We quote it at 20@25c for good to choice yellow.

CHAS. F. MUTH & SON,
Feb. 8. Cincinnati, O.

ST. LOUIS.—We quote honey nominal, very little selling. Demand very light. Comb honey, fancy white, 11@12; No. 1, 10@11; amber, No. 1, 9@10; dark, 5@7; extracted, white, 5@5½; amber, 4½@4¾; dark, 3½@4¼; brown comb, 3@6c as to quality. Beeswax, prime, 25½; choice, 26.

WESTCOTT COM. CO.,
Feb. 9. St. Louis, Mo.

NEW YORK.—There has been a fair demand for comb honey of late, and we are gradually reducing our stock. Fancy white is scarce, and finding ready sale at 10@11. Off grades of white and amber are selling at from 8@9; and mixed dark, and buckwheat at 6c. Extracted is in fair demand. We quote: California white, 5½; light amber, 5; white clover and basswood, 4¾@5; buckwheat, 4; southern, 50c per gallon. Beeswax steady at 26@27.

HILDRETH BROS. & SEGELKEN,
Feb. 9. 120-122 W. Broadway, New York.

MINNEAPOLIS.—Market dull, and stocks heavy, especially of California. White clover, comb, 10@10½; dark fancy, 8. Preference is given the California goods, as they stand long shipment nicely. Fancy California white clover, comb, offered freely at 9@9½. Good demand for extracted, if fancy white. Shipments from California of extracted will no doubt come in soon.

S. H. HALL & CO.,
Feb. 9. Minneapolis, Minn.

CHICAGO.—Fancy white comb sells at 11c, that which does not meet the requirements of this grade, yet good white, brings nine to ten cents. No. 1, according to how nearly graded, 8@9; ambers, 7@8; dark and mixed, 6@7. If showing any granulation it sells chiefly at 6c. Extracted, 5@6c, for white clover according to quality and style of package. Ambers, 4½@5; buckwheat and mixed, 4c. Beeswax, 26@27.

R. A. BURNETT & CO.,
Feb. 8. 163 South Water St., Chicago, Ill.

KANSAS CITY.—Market is well supplied with comb and extracted. The demand is light. We quote fancy white, 1-lb. comb, 10; No. 1 white, 1-lb. comb, 9; amber, 1-lb. comb, 8; extracted, white, 5@5½; amber, 4@4½. Beeswax, 20@22.

C. C. CLEMONS & CO.,
Feb. 9. Kansas City, Mo.

COLUMBUS.—Present nice weather caused a little spurt in trade on honey. Prices remain as last quoted. Fancy white comb, 13; A No. 1 white comb, 12; No. 1 white comb, 11; No. 2 white comb, 10; fancy amber, 8½; No. 1 amber, 8; No. 2 amber, 7; buckwheat, 7.

THE COLUMBUS COMMISSION & STORAGE CO.,
Feb. 8. 409–413 N. High St., Columbus, O.

PHILADELPHIA.—The late arrivals of California comb honey have demoralized our market. Fancy comb, 10; No. 1 comb, 9; amber comb, 8; buckwheat, 7; extracted white, 5; extracted amber, 4½; extracted dark, 3¾. Beeswax, 25.

WM. A. SELSER,
Feb. 10. 10 Vine St., Philadelphia, Pa.

CLEVELAND.—We quote selling as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6. Beeswax, 26.

A. B. WILLIAMS & CO.,
Feb. 8. 80-82 Broadway, Cleveland, Ohio.

FOR SALE.—Extracted clover at 6 cents.
M. ISBELL, Norwich, N. Y.

FOR SALE.—Cheap, 25 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

CHAS. ISRAEL & BROS.,
486, 488 & 490 Canal St., Corner Watts St., N. Y.
Honey and Beeswax.
Liberal Advances Made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

I. J. STRINGHAM,
105 PARK PLACE,
NEW YORK,
keeps in stock a full line of popular
APIARIAN SUPPLIES,
which are first-quality, both in material and workmanship.
Celebrated Wisconsin Basswood Sections, Dadants' Foundation.
HONEY-JARS, 1-lb., square, with corks, $4.50 a gross; discount on quantity.
Catalog free, giving discount for early orders.
In writing, mention GLEANINGS.

Prosperity.
It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.
GEO. E. HILTON,
FREMONT, - - - MICHIGAN.
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The A. I. Root Co.'s Goods At Their Prices.
Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.
Cash for beeswax.
M. H. HUNT,
Bell Branch, Mich.

KIND WORDS FROM OUR CUSTOMERS.

I like GLEANINGS more and more, and do not think I could get along without it now. ALONZO KNIGHT.
Plain City, Utah, Dec. 13.

The tomato and cabbage seed I had from you last year, beat the country. MRS. JAS. O. BURNS.
Gesser, La., Dec. 20

The seeds I procured from you last year were excellent. The Breadstone turnip is the best table turnip I have ever tasted; so say others who have tried them here. ARTHUR A. EVANS.
Kingsey, Que., Canada, Jan. 22.

The imported queen which you sent me last month arrived safely (not a dead bee), and was as safely introduced. Please accept this belated acknowledgment. Your business methods are near perfection. C. A. BROOMELL.
Phoenix, Arizona, Nov. 19.

I certainly do appreciate GLEANINGS enough to continue my subscription with it, without premiums as an extra inducement to do so. The journal itself is well worth more than it costs each year. Stray Straws, Seasonable Questions, Notes of Travel, and Home Talks are each worth more to me, in one year's time, than GLEANINGS costs, besides the many other good articles it contains. ALMOND WEAVER.
Nicklow, W. Va., Dec. 16.

ORDERING GOODS IN SEASON.

I have just received the 100 lbs. of foundation shipped from your house Oct. 19th—over one month on the road. How would it have been if I had waited until next June? My advice to all is, order in season so as to be sure to have your goods in time. I am in favor of the narrow strips and the paper. Goods from your house are always all right, so far as I have dealt with you. E. G. COX.
Monkton Ridge, Vt., Nov. 23.

Friend A. I. Root, Marengo follows the example of Medina. Last Sunday a new Methodist church was dedicated—cost $12,500. But Marengo went one better than Medina; didn't wait till evening, but closed the other churches in the morning and went to Methodist church; helped give the money too. Served the new Baptist church the same way not a year ago.
Marengo, Ill. C. C. MILLER.

It seems wonderful to me how you manage to travel so much on your wheel, and to keep going so well the other numerous branches of industry that I feel assured must at least engross your mind at times, and, not only that, but to write such pleasing and instructive descriptions of what your observant eyes have noticed on your journey. I have gained more real knowledge of American geography through GLEANINGS than from any other source. J. F. MUNDAY.
Maitland, N. S. Wales, Nov. 12.

For the eighteenth year I hand you one dollar for GLEANINGS, my old-time friend. It has journeyed with me through the years. These years have brought to me many clouds of sorrow and also many of joy. The same bee-hives stand where we, wife and I, placed them in those far-gone years. She long since entered into rest, and my bark still rides the billows of life. But *now*, not as *then*, I hold a steady and well-known course. My compass is set. Through all these years GLEANINGS came with a smile of good cheer, never a frown God speed all good. J. E. LAY.
Hallettsville, Texas, Dec. 31.

THE LEAN-MEAT DIET; TESTIMONY FROM ONE OF OUR OLD FRIENDS WHO IS A PHYSICIAN AS WELL AS A BEE-KEEPER.

I wish to say that I have used the meat food according to the manner and form recommended by you in a former issue of GLEANINGS, with the most gratifying results. There can be no question in the minds of any who have tried the diet as to its merits. It will save thousands of lives, and a world of misery to human kind. J. W. PORTER, M. D.
Ponca, Neb., Dec. 9.

By all means give us more of Mr. Doolittle's stories. I should like to shake hands with him. How plainly he teaches! The cheapest is not the best. His lessons are all good, clear through. No, indeed; I don't want that big "D" after my name. The dollar may be a little late, but is sure to come at last. GLEANINGS first, last, and all the time. A merry Christmas and happy New Year to all. JEPTHA HAMMOND.
Salyerville, Ky., Dec. 17.

Inclosed you will find money order for my subscription for GLEANINGS for five years, commencing Jan. 1, 1898.

Allow me to suggest that you draw the attention of your foreign subscribers to your lower rates for a five years' remittance, and to the fact that the money order for the five years is the same as for one—at least, so far as New Zealand is concerned. I have only just noticed your rates for a five-year subscription, although a subscriber for many years. WM. C. BROWN.
West Mosgiel, Otago, N. Z., Dec. 7.

Mr. Danzenbaker:—Your "Facts about Bees" was duly received, and is worth more than a dollar book that I read on bees. THEO. S. HURLEY.
Garwin, Ia., Dec. 28.

Mr. F. Danzenbaker:—I received your little book, "Facts about Bees," some time ago, and am so pleased with it, and convinced that your hive is all that you claim for it, that I am going to order ten, early in the spring. I have been a bee-keeper only ten months; but in that time I have thought and studied more about bees than any thing else. I have King's Bee-keepers' Text-book; Bees and Honey, by Newman; A B C of Bee Culture, by Root, and Doolittle's Scientific Queen-rearing, and am a subscriber to the *American Bee Journal* and GLEANINGS, but I like your little book, for a two-cent stamp, the best of all, because I believe what I have learned from it will bring me in the most money. W. W. LATHROP.
Bridgeport, Conn., Jan. 16.

The last half-dozen strawberry-plants came all right, and are all growing vigorously. They did not lose a leaf in transit. I am quite proud of them, as they represent $13.00 spent for plants, and I feared I should have nothing to show for it. I will not ask you to send more this season, but next year I shall want more. I am looking for 100 from Florida, to come in care of a friend who is coming out, and I look for them to come in good shape.

I wish you could see what "gardening in December" looks like here with irrigation, and our "King of the Garden" limas that grow and bear perennially. It is a great relief to know Jack Frost will not get our luxuriant limas and tomatoes.

Bees are just beginning on logwood, and prospects are fine for a good harvest from this source. Bees are strong when properly managed, many being in supers already. The flow will last six weeks or two months. H. G. BURNETT.
Linstead, Jamaica, W. I., Dec. 27.

Wedding-bells as well as sleigh-bells have been ringing at "Rootville" this month, and at least two of the Rootvillians are supremely happy. Miss Constance M. Root, daughter of Mr. A. I. Root, was married, Feb. 1, to Mr. A. L. Boyden, one of The A. I. Root Co.'s most faithful and trusted employees. Our heartiest congratulations are hereby extended to the happy pair.

We don't know whether there is any rule about it or not down there among the Roots; but if we remember rightly Mr. Calvert, the business manager, after being in the employ of Mr. Root for a while, won the hand and heart of his eldest daughter; then, Ernest R. Root did the same thing with one of their charming lady employees—Miss Elizabeth Humphrey; and now Miss Constance captures (or more likely was captured by) Mr. Boyden. And so it goes. But so long as everybody is happy and contented, and each has the "best companion in the world," what more can be desired?

Our congratulations to the Root-Calvert-Root-Humphrey-Root-Boyden-and-A.-I.-Root combination of Roots and Rootlets.—*American Bee Journal.*

OUR TOMATO BOOK.

I have one of your good books on tomato culture. I have read it over and over until it seems as though I am personally acquainted with you. I have been gardening for the past seven years. I am, unfortunately, deaf, so I had to take up something outside of stores. I formerly was a merchant; but I have a good trade worked up this season. I have sold nearly $1000 worth off from five acres, and have a quantity on hand yet. I had used cloth some before I got your tomato book, but have increased the amount greatly since reading it. I am much interested in your garden of one-fourth acre. I am planning to build a green or hot house in January, and use a large amount of cloth besides. I sold over $100 worth of plants last spring, and $25 worth of Grand Rapids lettuce. I started the plants in a hothouse; made frames the same as you tell about, then used the old hot-bed manure a year old, about 6 in. of it or so, without any bottom heat. I had nice lettuce the 1st of June. I like the garden business very much. CHAS. B. WETHERBY.

Fulton, N. Y., Dec. 13.

THE A B C OF BEE CULTURE, AND HOW IT WAS APPRECIATED IN A FAR-OFF LAND.

Some time ago I came across in one of the bookstores in Valparaiso a copy of your book, A B C of Bee Culture. By going hurriedly through its pages I soon came to the conclusion that it was a first class book, not only by its completeness but also by the singularly good idea of having its matters treated in alphabetical order, which enables one to find readily what he requires. I scarcely need say that it soon made me an admirer of bees, and I can now add my name to the "throng of eager, questioning brothers and sisters in the art of bee culture in other countries," to whom you have dedicated your work.

As a Chilean I only regret that there is no Spanish edition of so good a work for my countrymen to read and study, for not all of them have the advantage of understanding English. As a result of my perusal, a furore for bee-keeping has possessed me, and I now have 50 colonies, which I hope to run up to 400 or 500. I have arranged my apiary on the straight-row plan given in your book, page 21 Following the instructions given in "Hive-making," I have managed to make a Langstroth hive.

In this country bee-keeping is not unknown; but, as in all Spanish-descendant countries, no attempt whatever is made to improve on old systems unless it be like going on sandals instead of barefooted, which is very poor work. What some people have shown to me as frame hives have made me smile, knowing as I now do what *you* call a frame hive.

ADOLFO EASTMAN COX.

San Francisco de Limache, Chile, Sept. 10.

F. GREINER'S IDEAS IN REGARD TO THE GOVERNMENT ENCOURAGING THE TOBACCO INDUSTRY.

Mr. Root:—That you may know what other people think in regard to tobacco, allow me to say a few words on this subject. I have thought a number of times before to disclose my sentiments to you, but have, after all, not done so. Of course, Mr. Whitney is a tobacco slave, and perhaps of strong drink too; for, sadly enough, very few men of high position in our land are total abstainers. We as a people should learn of the railroad managers, who have business sense enough to select only total abstainers for their employees. We are lacking this business qualification; yes, we often furnish "our servants in Washington" with just that which they should not have, in order that they might give satisfaction to their employers, the people.

But to return to tobacco. I myself have a great many times been more than inconvenienced by this persistency of men smoking anywhere and everywhere. As our lady secretary of our Ontario Co. Beekeepers' Association said to me a year ago, after our convention: "Men, when they begin to smoke, at once lose all regard for the comforts—yes, rights—of others, and selfishness takes possession of their whole being." And is this not so?

I believe it is my own and every one's inheritance from God to have pure air to breathe. We are entitled to it, every one of us—man, woman, and child (yes, the poor children); and whenever a man pollutes the air anywhere, where others are obliged to be, he is robbing these others; there can be no question about it.

I have wondered that, in your war against the government officials, you have omitted to speak of the tobacco-nuisance in the postoffices of our land. Take, for instance, our postmaster at Naples. He is receiving a *large* salary for the business he is doing—a salary which places him above all want, and he *need* not conduct any other business combined with his postoffice business; but he must have his tobacco and cigar stand. In consequence, a set of loafers are hanging around, puffing, puffing away, making the otherwise commodious room quite unfit for a decent man or woman to enter. All prejudice put aside, should not our government put a stop to such work? or must we submit, and be constantly imposed upon?

It is a pleasure to see that some railroads keep, or try to keep, their depots free from this filthiness of tobacco; but, again, can a man travel any distance, long or short, without constantly coming in contact with this sickening tobacco smoke? Why, Mr. Root, every time I return from a tour, even a short one, I am ready to swear off from ever leaving home again. How sweet home seems where one can protect himself and his children from this destroyer of comfort and life, tobacco! I hope you will continue your war against the foe. I believe all the good people are with you. FRIEDEMANN GREINER.

Naples, N. Y., Jan. 13.

Wants and Exchange Department.

WANTED.—Extracted honey, incubator, shotgun, watch, for strawberry-plants and golden Italian queens. J. F. MICHAEL, Greenville, O.

WANTED.—To exchange one A. I. Root's make of one-piece section machine, in good condition, for honey or offers. WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—Work in apiary by experienced man, 23; single, reference. Box 101, England, Pa.

WANTED.—A hand or power bone-mill, rifle, or shotgun, in exchange for foundation-mill.
W. S. AMMON, Reading, Pa.

WANTED.—Situation in apiary by an experienced young man. References.
A. BOOMHOWER, Gallupville, Scho. Co., N. Y.

WANTED—To exchange 300-egg-size incubator, in perfect running order, or strawberry-plants, for Italian bees in Hoffman frames.
L. M. ADAMS, Centre White Creek, N. Y.

WANTED.—A man with some experience with bees to work at bees and on farm. Give terms and reference. Must be temperate.
W. LA MAR COGGSHALL, West Groton, N. Y.

WANTED.—An apiary to attend by a man of 25 years' experience. Address
J. S. COLYER, Perulack, Juniata Co., Pa.

WANTED.—Bees in exchange for 40-acre farm.
R. S. BECKTELL, Bellaire, Mich.

WANTED.—A desirable location with plenty of white clover and basswood to locate several beeyards, 4 to 6 miles apart. If any reader of GLEANINGS should know of such a location, please write to me at once. D. E. L'HOMMEDIEU, Colo, Story Co., Iowa.

WANTED.—A position by young man of 20, for the coming summer Will work in apiary or upon farm, well experienced in both. References and photo can be furnished if wanted.
F. W. MANLEY, Yale, Mich.

WANTED.—To exchange large fruit-dryer for offers.
EZRA G. SMITH, Manchester, N. Y.

WANTED.—To exchange supplies—Root's goods at Root's prices—for honey or wax.
O. H. HYATT, Shenandoah, Page Co., Iowa.

WANTED.—Four colonies pure Italians; 8-frame Langstroth, no super. Must be cheap; correspondence solicited.
W. H. KERR, Crawfordsville, Ind.

FOR SALE.—One-half interest in five hundred colonies of bees. Good opportunity for a man with some money. Finest location to be found in the alfalfa district. JOHN A. HARRIS, Harris, Col.

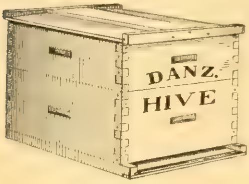
The Bee-keepers' Review

For January is really an old-time, special-topic issue on the no-bee-way, or plain section, and the "fence" separator. It gives the views of such men as Crane, Heddon, and Bingham. Mr. Aspinwall writes at length upon foundation, and particularly in regard to the new, no-wall style, and there is a fine picture of a super of partly filled sections in which the comb was built from this kind of foundation. The frontispiece is from a photograph of eight filled sections, four of which are of the old-style, and the others of the plain variety. It is an object-lesson that all can understand and appreciate.

Better send $1.00 for the Review for 1898 and receive the December number free, or, if you prefer to see samples before sending your dollar, send ten cents for the December and January numbers; and if you then decide to subscribe, the ten cents that you have paid may apply on the subscription.

W. Z. HUTCHINSON, Flint, Mich.

In writing advertisers, mention Gleanings.



$100

Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,**
or F. DANZENBAKER, Box 166, Washington, D. C.

In writing, mention Gleanings.

WANT MONEY?

Easy to make selling **BEVERIDGE'S Automatic Cooker.** Practical and satisfactory. No scorching, no odor. Saves labor and fuel and fits any stove. **Good pay to agents** of either sex. 2385 sold in one town. Write (P. O. 963), **BEVERIDGE MFG. CO., Baltimore, Md.**

In writing, mention Gleanings.

Philadelphia Branch of
THE A. I. ROOT CO.,
10 Vine Street.

Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

Booking orders for Nuclei and Italian Bees for shipment. Write for prices.

In writing, mention Gleanings.

For Sale Cheap.—25 *sash*, 3 ft. 6 in. x 8 ft. x 2 in. thick; also about 1000 lights of 12 x 12 A glass.

J. S. WARNER, Medina, Ohio.

In writing, mention Gleanings.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

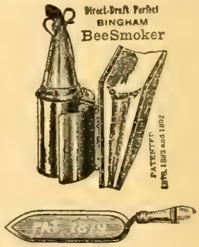
Smoke Engine (largest smoker made.)	4-inch	stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
Plain	2-in.	"	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. Eagerty, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

In writing advertisers, mention Gleanings.

AMERICAN BEE JOURNAL FOR 1898!

Have you seen it? If not, send at once for a free sample copy.
Here are the departments it contains.

1. **Contributed Articles.**—Written by the best and most practical bee-keepers.
3. **Convention Proceedings.**—Very interesting bee-talk.
3. **Beedom Boiled Down.**—A new department, and a good one. Gives the *best*, or *cream*, of all the other bee-papers.
4. **Editorial Comments.**—Just what the name indicates.
5. **The Weekly Budget.**—Newsy notes and personal items.
6. **Questions and Answers.**—Here Dr. Miller draws on his nearly 40-years' experience, in answering the many questions propounded.
7. **General Items.**—A miscellaneous department of reports from bee-keepers, short items, etc.
8. **Question Box.**—Here 20 or more expert bee-keepers give their various opinions on a single question.

Well, what do you think of all that? Better send on $1.00 and take the Bee Journal this year any way. Back numbers sent from January 1. Address

GEO. W. YORK & CO., = = = 118 Michigan St., Chicago, Ill.

In writing advertisers, please mention Gleanings.

GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

Published by The A. I. Root Co.
$1.00 per Year
Medina, Ohio.

Vol. XXVI. FEB. 15, 1898. No. 4.

STRAY STRAWS FROM DR C. C. MILLER

IN ADDITION to the advice given John Camm, p. 96. he might increase his surplus tenfold by allowing only one swarm instead of two from each colony.

EMPHATICALLY I indorse the advice, p. 98, to have a bee-space around all division-boards, followers, and dummies, unless you want them to remain permanently.

ONE POUND OF WAX comes from the cappings of 80 lbs. extracted honey, says C. P. Dadant in *A. B. J.* But remember they don't extract till the close of the season.

THE LATEST LUBRICANT for making foundation in Germany is 1 part alcohol, 3 parts skim milk (some say whey). Alois Alfonsus says 10 per cent alcohol is enough.

I COULDN'T MAKE Craycraft's corn-husks work well in smoker. The favorite smoker fuel the past season "in this locality" was small chips gathered from the chip-yard, in dry weather.

SUN EXTRACTORS are painted white instead of black, outside and in, by L. A. Aspinwall. That's better for the wood; and if the wax is heated too much there's danger that propolis will melt and mix with it.—*Review.*

G. C. GREINER says, p. 86, that buckwheat doesn't show in supers till somewhat advanced. Right. And isn't that the general rule? I never expect to see any signs of the clover crop in the hive till ten days after the first clover bloom.

I DON'T SUPPOSE I'll get any lindens planted this year on the streets of Marengo; but bee-keepers who are not too lazy or too busy will do well to furnish trees of that kind free to intending planters. A linden a mile away will be as valuable as one right on your own place.

"THERE IS CERTAIN WORK," says Mrs. Axtell, p. 92, "that must never be neglected, whether bees store honey or not." That doesn't agree with Prof. Cook, who speaks of little or no work being required in years of failure. I'm on the woman's side. In a year of big yield, the most of the work would have to be done, even if I didn't get a pound of surplus.

J. H. CLEVENGER asks about N. Genn's wintering, p. 95 and you answer about mine. Probably Mr. Genn winters without bottom-board, or else has lath under sides and back. If in cellar, three thicknesses of lath at the sides with open front and back wouldn't be bad.

HOFFMAN FRAMES space the bottom-bars better than nails and things for E. Kretchmer, p. 97; but my Hoffmans vary more than I like at the bottom. What's the matter with putting a second nail within three inches of the bottom, friend Kretchmer, thus making it sure and exact?

MRS. AXTELL is right, p. 92, in thinking it's advantageous to have sections on early. Put 'em on too early, and the bees may spoil 'em. But I'd rather have 'em on three weeks too early than a day too late. About ten days before you think bees will store in them isn't a bad rule.

C. DAVENPORT thinks bee-keepers have done much themselves to lower the honey market by reporting large expected crops.—*American Bee Journal.* I know it's the practice of some of the large dealers to send out inquiries as to prospects, and, of course, this must be to help set price.

I WONDER whether the coming section-cleaner will use sandpaper, or run something in the line of a planer. In any case I suspect that the day of hand cleaning is about over. [That question has been revolving in my head also. Practice and not theory will have to come in and decide for us, I suspect.—ED.]

I SECOND the nomination of Manager Secor as pure-food delegate—not merely for what he'd do, but for what would be done to him. He'd load up with good ideas and enthusiasm that would make his work for us more effective. Hurrah for Secor! [Yes, call out the word all along the line. Hip, hip, hurrah for Secor!—ED.]

I SMOLE A SMILE of considerable extent when I read what A. I. Root said about his wife, p. 103. To any one who knows what a thorough home-body Mrs. Root is, and how utterly devoted to the interests of her family, the idea of her needing to hear a "plea for the sacredness and sanctity of the home" is too funny.

HASTY, in *Review*, referring to the possibility that the mere presence of a new queen of gentle stock may soften cross bees, says: "May it not be that all bees immediately after requeening haul in their horns a bit, and feel as if home were hardly worth fighting for? Experiments with a cannibal queen given to gentle bees would solve that question."

THE *Review's* Reviewer half way thinks Eagerty's plan of spreading sections on grass in shade instead of wetting them "would be a handy and winning scheme sometimes." But say, Hasty, I'd dreadfully hate to wait till grass grows before making sections; and, besides, I can wet a box of 500 or 1000 in less time than you'd spread and gather up a hundred.

I RUBBED MY GLASSES, and read several times that California deliverance, p. 99, "*Resolved*, That the new Union should absorb the old." And it was from California that the strongest—yes, the bitterest—opposition to amalgamation came. They wouldn't hear to a wedding, and now they want to make a cannibal feast of the old Union? Wonderful climate that! [What is the odds, if "Barkis is willin'?" on both sides?—ED.]

STACHELHAUSEN says bees can't thin septum of foundation. L. L. Skaggs says he has 100 combs in which the bees have thinned the septum.—*Southland Queen*. [Our experience is emphatically that of Mr. Skaggs. I wonder if Mr. Stachelhausen has really tested this matter thoroughly by means of a micrometer measuring thousandths of an inch. If he has not, then I shall be forced to the conclusion that he has not gone into this matter as deeply as he might.—ED.]

WHAT'S ALL THIS RUMPUS about needing separators to come to the tops of sections so the sections won't be bulged? My separators have always fallen ¼ inch below upper surface of sections; and if there has been any bulging I never noticed it. [Do not overlook, doctor, the difference between plain sections and the old style. A slight bulging at the top, tolerable in one, would be intolerable in the other; that is, it seems to me it is safer to err on the safe side in the use of plain sections than to err on the other.—ED.]

C. P. DADANT has been doing some figuring in *A. B. J.*, and says his average net pay at producing extracted honey is $7.00 per day. The trouble is to make a man understand you are consistent when you tell him that, and then advise him not to give up a steady job at $2.00 a day and go into bee-keeping exclusively. [If prospective bee-keepers could read what you and Dadant have done, our ranks might be flooded. I suspect the only way we can reconcile the $2.00 a-day steady job and the $5.00 and $7.00 a day is simply on the ground that the $5.00 and $7.00 averages are few and far between.—ED.]

PLAIN SECTION honey has been sold by the ton by J. E. Crane; but he uses slotted sections, then saws off the edge after they're filled. He has two saws just 1$\frac{9}{16}$ in. apart, coming ⅛ in. above saw-table, runs the four sides of section through, leaving edges clean and white, much neater than they could be made by hand scraping. He says honey is more attractive put up in this way, and sells more promptly, the "more promptly" in italics.

HOW IS IT, Mr. Editor, that you'll encourage that man Niver to say things about the T super to hurt my feelings, when you know how sensitive I am? Allee samee, those T supers have helped me to a nice little sum. [Admitted; but how do you know, doctor, that some other surplus arrangement might not have produced just as much honey, with less labor? Understand, I am not condemning the T super; but I "smoled" a big smile of satisfaction, even if Niver did "whack" at you over my shoulders.—ED.]

I INVENTED the smoker-hook, as nearly as I remember. So did several others. It's a thing that one thinks of as naturally as making something to hang up a broom. But it's very likely to be dropped after being tried, so it will continue to be invented by others in the future. [I wish, doctor, we could have a sort of picture-gallery, nicely indexed, of every thing under the sun that has been invented or thought of in beedom; then if by some means this gallery could find a lodgment in the head of every beginner, and old beginners, for that matter, why, there would be less inventing over again.—ED.]

YOU'RE MISTAKEN, Mr. Editor. I extracted enough honey for home use and to supply friends, and a good share of it was from new frames with nail spacers. The nail-heads projecting only ¼ inch, and being flat, they didn't catch in the wire cloth at all, somewhat to my surprise. A good many things that we know all about in theory turn out quite different in practice. [It was not *my* theory, but the *ipse dixit* of some one else who used them who raised the objection with regard to nails catching in the wire cloth of extractor-baskets. I will confess I never thought of the objection until it was put into my head. I hope it is no real objection.—ED.]

HOW IS IT about that matter of peep-holes, anyway? Don't magnify the difference so much that statements will have to be pruned down afterward. It doesn't seem that my inset sections are as "peepy" as painted; and my Danzy sections, with half the separators fences, are hardly better. [I do not think I have magnified the difference, doctor. In one place, page 817, I spoke with a degree of hesitation, as you may remember. Since that time I will admit I have spoken on this same question more hopefully; but it was only because those who have been using the two kinds have given me encouragement to do so. The few Danzy sections you produced would hardly give you a fair opportunity for comparison. After all, the best illustration of the difference is shown in the half-tone that is given in the frontispiece of the January *Review*, and which, by the courtesy of the editor, we are able to reproduce in this issue. Mr. Hutchinson says he has tried to be fair in his collection of the two lots of sections; and if he has been I do not think any thing I have ever said will need to be pruned down; for photography, in connection with half-tone engraving, tells no uncertain tale.—ED.]

I DIDN'T THINK for a minute, Mr. Editor, that there was 10 lbs. weight on a T tin; but one that sags ¼ inch with 10 lbs. will sag quite too much with the weight that *will* come on it. At least, I wouldn't sell such till I knew by trial they wouldn't sag. [It is possible, doctor, that a ten-pound weight placed in the center of the T tin might make it sag ¼ inch, when a two-pound weight might not have any perceptible effect. Two pounds is all I can really figure there would be on the T tin at a time. I do not really see the necessity of making the tin any stronger than is necessary. I have just been trying a two-pound weight on one of those T tins, taking one at random, and I can not see that it has moved a particle from the true straight edge. ED.]

"MR. SNYDER'S arraignment of bee-keepers seems a little severe," quoth ye editor, p. 84. I should say it was a *big* severe. Isn't he speaking merely for his "locality"? So far as my observation has gone, he's away off. Bee-keepers in general are honest, and the few rogues should not be taken as fair specimens of the whole. It's right to put the best side of a section next the glass, just as it's right to put the best side up on the table; but the man who faces with good sections, and puts poor stock in the middle, isn't smart. It'll come back on his own head. [You have hit the nail on the head, doctor; and if I could substitute what you say above in place of the footnote that I gave, I would "fake it." However, I will adopt it now. When I used the two words "little severe" I meant a *big* severe. For instance, I say that Mr. A was a "little rough" on Mr. B, I politely intimate that he was very much so.—ED.]

NO-WALL FOUNDATION is highly approved by L. A. Aspinwall, in *Review*. He used 3 or 4 lbs., and the product was remarkably fine. The only trouble (the foundation being warped to one side) he thinks may be overcome by fastening on three sides, possibly using split sections for that purpose. [We can make mills for this kind of foundation far easier than we can make those that use walls; but our experience seems to show that it is not *light walls* or *absence of walls*, but, rather, *thin bases*, with a *moderate wall*, that is a desideratum. If the no-wall foundation has bases as thin as natural it will be too light to resist sagging. If bees will thin walls down, and not bases, would it not be better to have a foundation with light walls, and yet with bases as thin as the bees make them? I may be wrong, but this is the way it seems to me. I hope that friends Aspinwall and Hutchinson will keep on with their experiments.—ED.]

GENERAL CORRESPONDENCE

EXTRACTED HONEY.

Why it Does and Doesn't Sell; the Farmer Bee-keeper; a Strong Plea for Well-ripened Honey; the Need of Grading Extracted Honey.

BY DAN WHITE.

In my last article, Nov. 1st GLEANINGS, page 767, on peddling made easy, I confined myself to the marketing and sale of extracted honey. I told about going to a town of about 5000 people, the plan I adopted, also my success, and that I expected this place alone would call for at least 2000 lbs. of honey. You know we sometimes allow our imaginations to run too high; but in this case my estimate was too low by nearly a half. So you see giving away a little honey and leaflets is all right; but if you are going to put *too much* dependence upon this alone, I shall be very sorry I ever told about it. It is certainly a nice way to get a trade started.

Now, then, if we will keep in mind the most important fact, and back up our short acquaintances with honey just as good as honey *can* be, the first orders will be followed by second and third orders, and a permanent trade or demand is established. Let me tell you what I want; and that is, for every bee-keeper, especially those interested in extracted honey, to join in this good work. Say we try it, and see if we can't create such a demand that it will actually force an advance in the price of honey. Suppose we form a trust—one of that kind of trusts that the people will trust us. I will agree to form a combine, providing we combine to be not only honest ourselves, but see if we can't devise some plan to get the people to combine in favor of extracted honey.

The only thing that bothers me very much in this honey business is to secure the crop of good extracted honey. Sometimes the honey-flow is light, and I can not half supply my customers. I have often read advertisements, "Extracted Honey for Sale," and sometimes I would almost feel like ordering some to supply my good old customers; but so far I have *never* ordered a pound simply because I was afraid I should get honey several grades below my standard. It looks to me as though we have been going along all these years without giving the grading of extracted honey a thought. Every fellow has been extracting and grading to his own notion, without saying a word to the other fellows. I believe we have just as good a right to agitate the grading of our product as have the comb-honey producers. While they are polishing and sandpapering their sections, say we put such a finish on our extracted honey that we can draw a little attention. You see, they are trying to attract the eye, and we will try to attract the *palate*. No fooling. Say we commence this season — not one of us, but *every one* of us. I know we have put this off too long; but in a few years from now we shall shape things around so that manufacturers of honey-extractors will be compelled to work overtime. Then think about our getting better acquainted. If we find any black sheep in our flock we will contrive some way to weed them out. I shall be certain to find some one that I shall not be afraid to order from any time my supply runs out. This will help the demand a little.

When I am scoring these chaps who are throwing out thin honey, I am all the time expecting them to come back at me. Yes; and if their cause is a just one they will. And, again, if I fail to get a good following on this line of reform I shall then make up my mind that too many have formed a habit and are too deep in the old rut to get out. I mean they will not resist the temptation of simply dropping unsealed combs (honey in all stages) into the extractor, and, with a slight turn, out comes the honey and water.

I imagine I hear some one say, "I extract just before the bees commence capping the honey." I will admit, if one is careful enough he can get a very fair grade of honey; but possibly this subject will come up later on, then we will discuss it.

Since my last article I have learned something worse than I ever before imagined; and that is, a bee-man who actually *boasts* of getting a larger yield of honey from about 90 colonies of bees than almost any other person could have gotten. He says plainly he is after *quantity* and not quality; and by extracting each hive every day he gets the quantity. This was put into barrels, and sent to the cities. Think of probably 10,000 lbs. of this stuff getting into our markets just from *one* man! How extensively is this work going on? I say, shame on such work. Dare any one say this is all right?

Talk about the dairyman watering his milk! Even if he does I can respect him just as much as I do the thin-honey man. Do I hear any one say there is no use, or not plenty of room to grade extracted honey? I believe it is a duty to call a halt on this selling water in honey, and then lay it all to the little innocent bees putting the water in there. Give the bees a chance, and we *all* know they will be honest. Shame on the man who will rob the bees of their stores and honesty too. I know if it were myself I would just let the bees cure up the honey all right; then if I were bound to sell some water I would just go to the pump and get all my conscience would stand, and proceed to do the mixing. Of course, I don't believe any one can feel just right after doing this; but you see I want it so arranged that some day, when I feel too bad about it, and no one around to hear what I say, I can unload the burden a little by just saying to the bees, "I have been honest to you, anyhow; and if the honey I watered is not all right, you may lay it all to me." I am perfectly willing to help coax any one to be honest on this line; but if we can not bring about the required result, why not ask for the enactment of a law something like the one the maple-syrup producers of Ohio are compelled to comply with?

I believe one can write much better and easier if he reads what others say on this line, and I feel like thanking Emerson Taylor Abbott for what he says in Jan. 1st GLEANINGS. He talks as though it were getting to be quite the fashion to rail about the farmer bee-keepers. I don't understand it that way. My aim is directed at those who are making bee-keeping their main business. Bro. Abbott closes with precisely my sentiments: Go to work and produce a little better honey than our neighbors, and then sell it at home, or as near home as possible. Yes, sir, Bro. Abbott, I have been doing this very thing ever since I learned to sell nothing but the very best perfectly ripened extracted honey. My first two years' experience was a little on the thin order; and the injury done to my home market during those two years can hardly be described. At that time I hardly knew what to do with just a few hundred pounds of honey. *Everybody* had gone back on extracted honey. I know all about it, because I was doing my best to sell what little honey I had. "*I don't like extracted honey*" got to ringing in my ears so I could hardly sleep. Sometimes the tune would change, "*I* want comb honey." I had tried to produce comb honey, but made a failure at that, and how I was going to pay about $1000 debt for hives and fixtures was a sticker. It is a wonder I continued in the business; but I found out I could fool the people *some* of the time, but could not fool them *all* of the time, and so I concluded I would just go at this honestly, with no fooling about it. Had I not mended my ways, possibly I should now be dumping my product in Bro. Abbott's market. Certainly I should not have had any control over a home market. There is no theory about this right and wrong way of doing any business. Facts are what we want—actual facts.

I wish I could say a few words of encouragement about placing extracted honey in the hands of grocers, but I can not do it. There are several serious obstacles in the way. Putting it in attractive packages, and commission, make it too near the price of comb honey. Then many honestly believe that liquid honey put up for the grocery is not pure honey. So many people consider honey a luxury, even if sold very low, they will not take it from the grocers as they should before we can ever throw our honey on the market as we want to. We must, in many places, educate the people by commencing in the common branches, and we must be so thorough that we finally see them graduate. Say we bee-men join hands by doing our part first class in every respect. Suppose we say less about the mixer and adulterator, and hunt out these chaps who will continue extracting this thin, green, raw, unripe stuff Many a time this stuff has been called adulterated honey; and is it to be wondered at, when we consider the wide difference between well-ripened honey and poor unripe honey? I believe I understand why so many extract poor grades of honey; and if I have any occasion to say any more about this I will tell you about it.

New London, Ohio.

[Since the publication of Mr. White's valuable article, given on page 767, last year, we have had a good many calls for it in pamphlet form, and we have finally decided to issue it for a merely nominal sum. After this came out I asked Mr. White to start his pencil to pushing again, for I was satisfied that one who could fill the article referred to so full of bright practical suggestions, could give us something more of value. I also asked for his picture. He objected to letting me have it; but as he did not absolutely refuse, I pressed my request and finally succeeded in securing his photo, made especially for these columns. I now take pleasure in introducing to you—

DAN WHITE.

Mr. White is a fair representative of those farmer bee-keepers—the despised class who have the reputation of putting honey on the market in all sorts of shapes and conditions. While our friend nominally belongs to that class I do not need to tell you that he is not guilty of any such practice—at least, not of late years. Mr. White is one of our American noblemen, a plain farmer whose very appearance is suggestive of rugged honesty and good hard practical common sense.

We have said a great deal about grading comb honey, in years past; but, as Mr. White says, I believe we ought to give attention to that in the extracted form as well. Now, then, as to combining into a trust. The scheme is all right, for it is a sort of trust that seeks not its own. I do not exactly know how such an association could be formed; and I somewhat question whether any more organizations than we now have are needed; and I am not sure but we could secure the object sought by asking those who join the U. S. B. K. U. to subscribe to certain conditions, one of which might be to this effect:

> I hereby agree not to put on the market extracted honey weighing less than 11 lbs. to the gallon.

Well, the matter is now up for discussion. —Ed.]

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SET YOUR BEES OUT EARLY.

Why and How to Do it; Valuable Suggestions from a York Stater who Owns Over 500 Colonies.

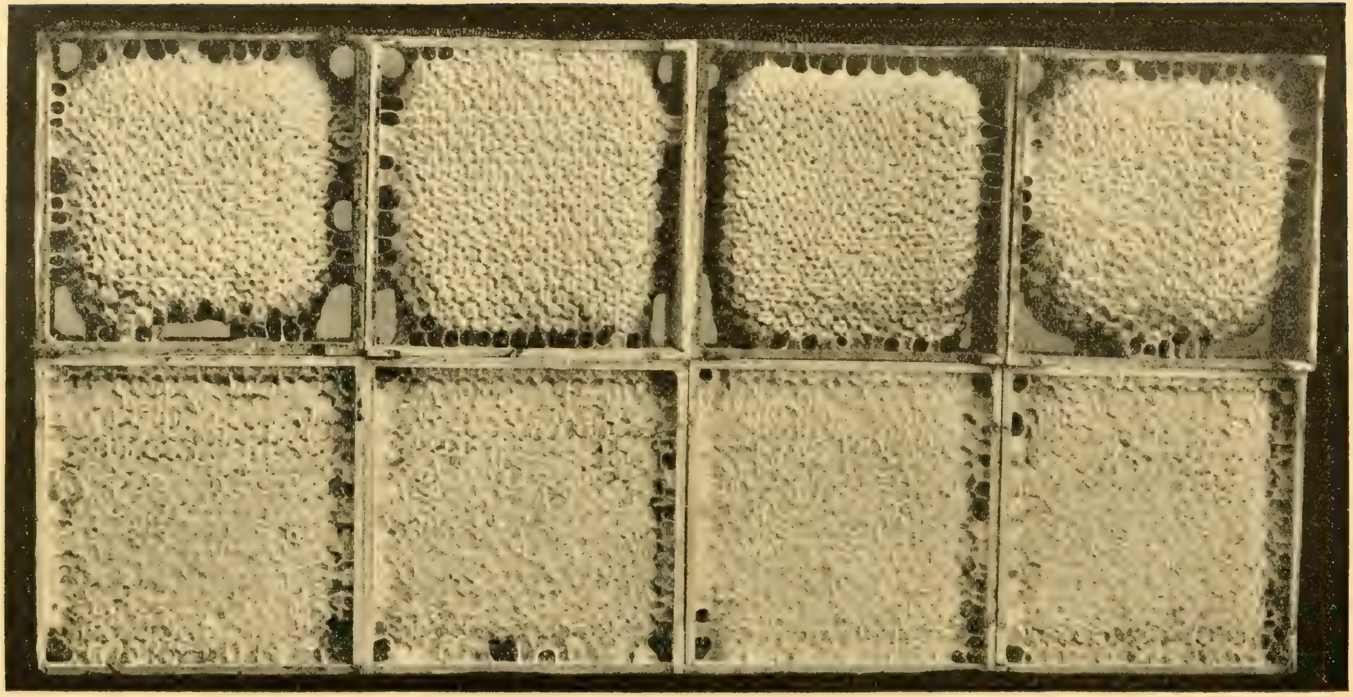
BY N. D. WEST.

My bees are now all in the cellars, sleeping very quietly. They had a grand fly Nov. 18th. Then I put them into cellars as soon as possible after that. I carry them out the last of March or by April 1st. I do not wait for a warm day to set them out as I used to do. I do, however, have some anxiety about the state of the weather the day they have their first fly. I prefer an early setting-out of bees, and getting an early brood started in cool weather before the old bees do very much flying in search of pollen or any thing else. They will get what water they need, without much effort.

After the first fly the queen will begin laying, and fill all the combs with eggs that these old bees can take care of; and they will care for more brood than any one would suppose, even if the thermometer should mark zero for a day or two.

Young bees should be hatching before the old bees are foraging very much for pollen and food; for when the old bees begin to work outside of the hive they die off very rapidly; and unless they have young bees to take their place the colony dwindles, and it takes time to recover, and the swarms are not as strong by May 15th, when the brood is started late, as when started early. By setting bees out early (not too early) bees will spring-dwindle some, but it will be earlier, and not so much at the time bees should be working. The dwindling will not be so perceptible either, as, by the time the old bees are dying off fast, young bees are hatching plentifully to care for the younger brood at a time when the swarm is at its weakest point. After this the swarm will rapidly increase in bees. The old ones will soon be gone, with a hive full of young bees for the honey harvest, and ready for early swarming. It is for this reason that bees wintered out of doors in chaff hives, when they do winter well, do not show spring dwindling as do those wintered in cellars by most bee-keepers. Cellar wintering, however, needs more experience to be successful, I think, than to winter out of doors, about the same as to produce comb honey successfully requires more experience than to produce extracted.

It is very important that bees do not waste much in their first flight after setting them out of the cellar. I have had bees waste very badly when I set them out on a very warm day, and let them fly as fast as carried out—that is, open the hives so that a hundred colonies will leave the hives the same day they are



AN OBJECT-LESSON IN COMB-BUILDING—PLAIN AND OLD-STYLE SECTIONS. (*From The Bee-keepers' Review.*)

This is a fair representation of such honey as *I* have seen produced in the two classes of sections. I am aware that much more perfect combs have been produced in the old style of sections than in the ones I have shown in the engraving, for I have produced them myself. In fact, I have produced just as perfect combs in the old style of sections as it is *possible* to produce; that is, I have produced a *few* such sections; but in the honey produced by Mr. Aspinwall and by Mr. Danzenbaker and by Barnet Taylor, the *majority* of the sections were filled out plump and full in the corners and next the wood, just as shown in the illustration. By taking pains in selecting I could have secured some better sections of comb that were built in the old style of sections, and, in the same way, I could have found more perfect faces of comb in the plain sections, or I could have found less perfect ones. What I have aimed to do is to show a fair representation of both classes.—*W. Z. Hutchinson, in the Review for January.*

set on the stands, and all at one time. The air will be full of bees, and they will often draw to one end of the yard, and at that end of the yard the hives will get too many bees, and at the other end the colonies will be left weak. Sometimes the front row will get too many of the bees. It depends somewhat on how the bee-yard is located, which way the wind blows, or which direction the sun is from them, as to which hives will be likely to get the most bees. But when bees are set out with hives (bottom fastened on I prefer), and set on their stands in the night or on a cold day, and not allowed to fly that day, then the bees will not fill the air so full of bees when they do fly and mix up so badly.

About the worst thing to dread we have is a light snow; and if the sun comes out very warm, causing the bees to have their first flight while the snow is soft, many bees will sometimes be lost by dropping on the snow. And, again, when the air is full of bees a cold chilly wind coming up will quickly cause bees to drop and alight on the hives and all over the ground close by. If it remains cold they will die; but at another turn of warm sun and no wind they will fly again if they alight in a good place; but if on loose snow they are lost.

It is true that bees set out later are not as liable to loss in this last-mentioned way. But for me, in my locality, I prefer early setting-out of bees.

Middleburgh, N. Y., Jan. 10.

SUGGESTIONS ON MOVING BEES.

How to Avoid Accidents; Shipping by the Carload.

BY FRANK M'NAY.

Moving bees is one of the most unpleasant as well as dangerous tasks we meet in bee-keeping. With good roads and suitable weather it is none too pleasant; but when it has to be done over almost impassable roads, and regardless of weather, it requires good management to avoid disaster of all kinds. Almost every season for the past fifteen years I have had occasion to move from one hundred to three hundred colonies, sometimes over roads on which the wheels were plunging in mud-ruts almost to the hub, and sometimes over stony roads and down long hills so steep that one or more wheels had to be chained to enable the teams to hold their load; and sometimes, on account of extremely warm weather, it has been necessary to start in the evening, and drive till the small hours of morning. During this time I have established nineteen apiaries, some of which I have sold, some leased, and some moved to better locations.

In this moving experience I have learned the danger of going unprepared for an accident by over-confidence in having them secured against the possibility of escape. That an ounce of prevention is worth a pound of cure is very true; but don't let a pound of prevention prevent having an ounce of cure. I have saved teams from a severe stinging, and possibly death, by having a strong cord attached to the draught-pin and the other end to the seat. It is dangerous and almost impossible to unhitch a kicking team attacked by bees. When moving bees with several teams they should be kept a safe distance apart, as a team following close behind a load on which bees escape is often in greater danger than the one drawing the load

When strong colonies have to be moved in very warm weather it is dangerous to remove the super and confine them all in the brood-apartment, for they are liable to overheat and melt down the brood-combs, even with the entire top of hive removed, and covered only with wire cloth. If they are to be confined more than one day, one comb partly filled with water, and placed in the super, will be a great relief.

If there is any subject in regard to bee culture that has been slighted it is instructions for shipping bees by the carload. I have been a reader of all the leading bee-papers for the past twenty years; but when I suddenly had occasion to ship my first car of bees I found I had but little information on that line; and but for a precaution that I thought of after we commenced placing the hives in the car, there would have been a severe loss; for had we gone on placing the hives close together, many of them would have been badly overheated for lack of circulation of air through the car. My plan was to load the hives firmly, yet apart, so as to secure a circulation of air around each hive. This was done by placing a row of hives across the end of the car, a few inches apart, then securing them in place by laying two rows of lath crosswise on top of the hives, letting the ends of the lath press firmly against the sides of the car, and nailing lath to each hive with one-inch wire nails. Then we placed another row over the other, resting on the lath, with space between the hives over the center of the hives in the lower row, then we nailed on two rows of lath, the same as before. This plan worked nicely, as there was not a hive moved from its position *en route;* and as they had to be loaded two tiers deep, this break-joint plan not only served to facilitate ventilation, but also afforded an excellent opportunity to sprinkle water in the top of the lower as well upper tier of hives, which was done several times, as they were three or four days on the road.

A car of bees produces an astonishing amount of heat. Although we left both small end doors and the large door on the shady side open, yet we could feel the air very hot inside the car. Since then I have used a stock-car instead of a box car for shipping bees in car lots, and find it much safer in warm weather, as it does not confine their heat. I did not think of using a stock-car for my first shipment.

On account of the partial failure of basswood and willowherb in this State last season we obtained only about one carload of honey, which I consider less than half a crop.

Portage, Wis., Jan. 8.

[Mr. McNay is one of the most extensive bee-keepers in the country, and his suggestions come from a large and varied experience.

As moving bees is one of the most disagreeable as well as dangerous operations in bee-keeping we may well read what he has to say with profit.—ED.]

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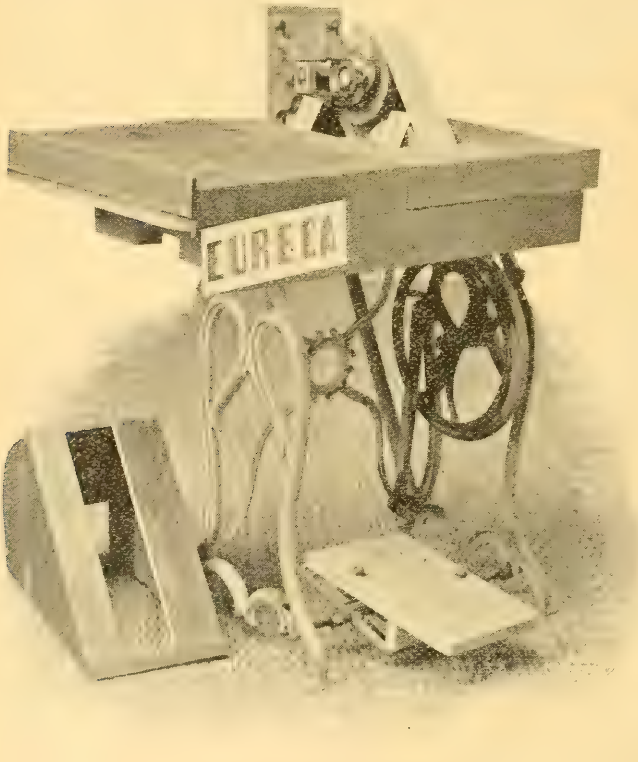
CLEANING SECTIONS BY MACHINERY.

How to Convert Old Sewing-machines into Section-cleaners.

BY J. A. GOLDEN.

I inclose a photograph of my improved section cleaner and polisher. The improved feature consists of a revolving belt instead of a wheel, as illustrated in *American Bee Journal*, page 33, 1898; and as the photograph gives a better explanation of the belt device as being far superior to that of the wheel, it is unnecessary for a long article.



GOLDEN'S SECTION-CLEANER.

Nos. 1 and 2 are wooden wheels 3 inches wide and 4 inches in diameter. No. 3 is where a tension screw passes up through the table by reaching under, and a turn raises or lowers the frame holding wheel No. 2, thus tightening the belt or loosening it as desired. This frame is hinged to the table at the further side by the use of a belt. The face of the section comes in full contact on the flat surface of the belt between the wheels, the wheels so arranged as to revolve as closely as possible together. The belt revolves at a high speed. The section is held between the hands crosswise of the belt, thus avoiding any danger of cutting the section through at the folding corners. Then turn the section and merely touch the ends and edges of the section, and the work can not be excelled by any other method known to the bee-keeping fraternity the world over. By using the wheel, but a small portion comes in contact at one time as the section is glided over the wheel; thus you will at once see a great advantage gained by the improved belt arrangement. If a coarse grade of sandpaper is used it accomplishes the work much quicker; however, we prefer a medium grade.

I hope The A. I. Root Co. will construct a machine of simple form, and actually test the belt improved device, and tell the bee-fraternity what they think of our idea of a section-cleaner.

I am very doubtful if this belt-revolving secton cleaner and polisher will ever have its peer; and I am satisfied there is not a bee-keeper in the United States, who produces section honey for the markets, after seeing it perform the work, but will procure one.

As we freely donated the wheel device to the fraternity, the belt improved device will be protected by letters-patent.

Reinersville, O., Jan. 15.

[When the article on page 35 of the *American Bee Journal* for 1898 appeared, referred to above, from the pen of Mr. Golden, I was interested, and asked for the loan of the engraving that went with it; and by the courtesy of the editor of our esteemed cotemporary I am able to reproduce it in our columns. It is the one showing Miss Flody operating the machine. Soon after, I received a communication with two photos, from Mr. Golden, one of which showed an improvement on his former machine. I have had half-tones made of both for our own columns, and they are shown herewith also.

Not having tried any of the section-cleaning machines, I know nothing about them from a practical point of view; but when friends Aspinwall and Golden say they do their work satisfactorily and rapidly, no one is more ready to believe it than I. I can not imagine how we could have been so stupid all these years as not to see that sections could be cleaned by a machine causing a rapidly moving surface of sandpaper to press against them unless the plain section made their use possible in a way that the old style of section would not.

I believe that all three of the machines that have been so far illustrated in our columns are good ones. As to which one will be best will depend upon a careful trial. I am myself almost inclined to believe that a revolving disk having sandpaper on its surface will offer some advantages not afforded by any of the other machines. I hope to be in position before long to know something about it, and in our next issue perhaps I can show a picture of it.—Ed.]

J. A. GOLDEN.

* * *

SELLING HONEY FOR CASH.

How to Sell Direct to Consumers in 60-lb. Cans; Credit Selling Poor Policy.

BY M. H. DUNN.

Allow me a little space to tell just how I disposed of my honey at a fair price, and got the cash in hand for it, and did not go ten miles from home. My crop consisted of 6500 lbs. of extracted sage honey, put up in 60-lb. tin cans, two cans in a case. I have a light two-horse spring wagon that will carry about 1000 lbs. I would take four or five cases in the morning into my wagon, and start out, coming home every night, and I did not in any instance fail to sell out before coming home. Stopping at every house, I rapped at the door, wished them good morning or afternoon, as the case might be, and, with a small sample bottle in hand, I would say, "Do you ever use any honey?" Invariably the answer comes, "Oh! yes."

Then I would say, "Would you wish to get a can?"

The answer would come, ' How do you have it put up?"

"In 60-lb. cans only."

"How do you sell it?"

"At $3.00 a can, or 6 cts. per lb., and my crop is all disposed of but four cases that I have kept at home to retail from."

To those who want small quantities, the one cent a pound more charged for small quantities sold my entire crop by the can, and, in a number of instances, a case in a place, and in three different places two cases, and I sold only one can out on the road in small quantities, and only one case in a store. I could have sold it all to the wholesale trade, but could get only $3.75 per 100 lbs. for it.

I think I am leaving my subject a little, as I started out to tell how I got the cash for it.

I had been in the grocery business for eight years in California, and knew about what they would have to pay at the store for it. In case they did not have the money I would say, "When will you have the money? State the time, and I will bring or send you a can; but I do no business on credit, and am selling very cheap for cash."

In almost every place where they said they had no money they would buy a can before I left, and find the money to pay for the same. It would be an easy matter to dispose of a crop of honey on credit, but it would be a difficult job to collect the money afterward; and the man who sells his honey on credit not only injures himself, but is ruining the market for his fellow-man. Truly he can get a cent or two a pound more for it, but he is sure to lose in the end. Some of my friends, bee-keepers, will say, "But we all can't sell five gallons at a time." Now, friends, it is just as easy as falling off a log. If you peddle your honey, go to the country, among the farmers. If they object to five gallons, answer them thus: "At 5 cts. per lb., only 60 cts. a gallon, it is cheaper than syrup. You use syrup, do you not? Honey is much more healthful."

We peddlers should leave the town and city people to the merchants who must have their goods put up in small quantities to suit the demands of their trade, and get higher prices, as the town and city folks mostly buy in small quantities. Bro. Niver, quit the credit business, is the advice of one who has tried it.

Fullerton, Cal., Dec. 27.

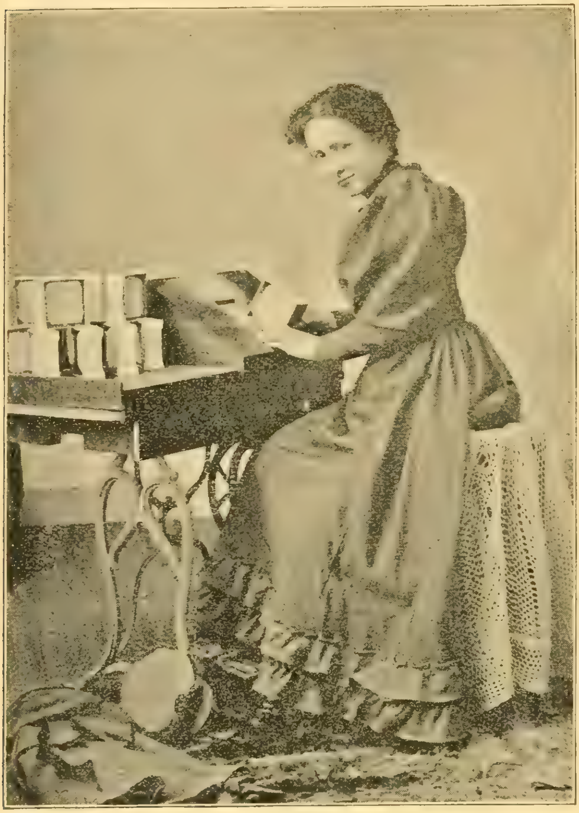
* * *

WINTERING EXTRA QUEENS.

Two Colonies in One; the Tenement Plan Explained.

BY DR. C. C. MILLER.

I would hardly venture to say any thing about this if it had not been for that request of my good friend Doolittle, page 888, for any "mite" one might happen to have. A few years ago double hives were a kind of fad with me. A ten-frame hive had a division-board ⅜ inch thick, dividing the hive into two equal portions. There were some good features about them, especially in the matter of preserving heat. I wintered many colonies in them, or nuclei, if you prefer to call them so. Four frames were on each side, sometimes five. Of course, the division-board was made bee-tight, so no bee could pass from one side to the other. It is not an easy thing to winter a colony having bees enough to cover only two or three frames, but there's no trouble in wintering a colony whose bees cover four, five, or six frames. Well, don't you see that, if you had a colony covering six frames, and in the middle of winter you could, without disturbing the bees, slip a thin board right down through the middle of the cluster, that would make no appreciable difference as to the heat, supposing the board was as warm as the cluster, and the bees would go right on wintering as if no change had been made.



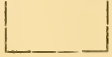
GOLDEN'S ORIGINAL SECTION-CLEANING MACHINE.

At any rate, I do not know that these nuclei with enough bees on each side to cover two or three combs wintered well; and I wintered a good many of them so for a number of winters. Whenever I looked at them in the winter I found the bees all clustered together against the division-board, just as though they were one cluster. The thought may occur that the bees would not be able to move away from the division-board to cluster on the outer combs when the honey from the center combs was gone. I paid no especial attention to this; but I have no recollection of any trouble from it. They were always wintered in the cellar, and perhaps they always carried the honey from the outer combs without moving the cluster.

Now, friend Doolittle, I don't know that this is even a "mite," for I'm pretty sure there's nothing new in it to you, and yet possibly you haven't given it the trial it deserves. And I feel pretty sure there may be some of the younger brethren in the ranks who might do well to try something of the kind. You will readily see that, by dividing a colony in two parts, you can thus carry through 100 extra queens if you have 100 colonies.

Possibly, however, you have not thought this plan worth considering, because too much trouble to divide the colony and then unite again in spring. It might, however, be a good thing in cases where weak colonies are to be united in the fall. As to uniting in the spring, my greatest trouble was that too often, in my earlier experience, they united when I didn't want them to. All that was necessary was to have one side queenless; and if there was a hole under the division-board, just large enough for one bee to crawl through, there was no trouble about their uniting peaceably and promptly.

I never tried it in any other way than having the division-board in the center; but if I were anxious to winter extra queens I'm not sure but I would try having the division-board to one side, so as to winter a two-frame nucleus by the side of a strong colony. I should hardly expect it to work so well, however, for the strong colony might not continue all winter against the division-board. I have tried wintering six nuclei in one hive, one frame to each nucleus, but never succeeded. But they were weak in bees, and it is possible the thing might succeed if each nucleus were strong.

As already mentioned, the greatest trouble at first was to have the division-boards bee-tight. I finally succeeded by using little tin troughs. A piece of tin as long as the inside length of the hive, and 1¼ inches wide, was bent in this shape:  The bottom part was ½ inch wide. Then for each end of the hive was another tin trough made the same way, only the bottom of the trough was made just a little more than ⅜ wide. The long trough was laid in the bottom of the hive without fastening (the hive had a tight bottom), then the end troughs were put in place and nailed with two nails. The end troughs, being smaller, fit in the bottom trough. The division-board was now pushed down in these troughs, and there was no possibility of a bee getting from one side to the other. The entrance of the hive was closed at the center for about 7 inches, making the two entrances 7 inches apart, and there was no trouble about bees getting into the wrong side nor about queens mating.

PARAFFINE PAPER.

On page 889, Mr. Editor, you say you think I lost sight of the point that paraffine paper must be cushioned down tight on the sections. Not a bit of it. I had in view all the time all that had been said, but *you* have lost sight of the point I was after. I think you will not find that I said anywhere that paraffine paper tightly cushioned down would be of no use. The only point I was after, and the only one I said any thing about, unless I am very much mistaken, was that bees had such an antipathy to paraffine that they would not deposit propolis on it. Here's what I said: "My own experience says that entirely too much has been claimed for paraffine. My bees deliberately plaster glue right on the paraffine " You will remember that on page 756, 1896, it was said, "Bees disliked paraffine," and that they were not inclined to deposit propolis to paper whose surface was paraffined. I was much pleased to learn that, and suggested that, if it was correct, it would be a good plan to paint with paraffine the ends of the top-bars. But, to my disappointment, I could not find that my bees had any objection to putting glue on it. And that's the only thing I referred to. See?

While I think too much was claimed for paraffine, it is just possible that bees may have some dislike to it, and it would be well to know how that is. With the paper cushioned down tight, will bees refrain from gluing it any more because it has paraffine on its surface than if it were beeswax or lard?

Marengo, Ill., Dec. 31.

[We used to winter our nuclei on exactly this same plan, and it worked well. The uniting after one queen died or was sold, was the easiest part of it. We don't use the plan now, as we now sell off the queens in the fall.—Ed.]

* * *

REPORT OF INSPECTOR OF APIARIES.

Thirty-four out of Sixty-six Apiaries Visited Diseased; the Inspector's Manner of Procedure.

BY WM. M'EVOY.

During 1897 I visited bee-yards in the counties of Welland, Lincoln, Wentworth, Brant Norfolk, Kent, Huron, Grey, Perth, Oxford, Waterloo, Cardwell, York, Ontario, and Simcoe. I examined 66 apiaries, and found foul brood in 34 of them. I found several of the largest and best apiaries in the province very badly diseased through the bees robbing foul-broody colonies that had been brought from other parts of Ontario and placed near them. Some of the owners of these fine apiaries had invested from $500 to $800 in bees—one man over $1000; and to get their good apiaries badly diseased through foul-broody colonies being shipped into their localities was pretty hard to bear with; but I am satisfied that *none* of the parties that either bought or sold the diseased colonies that had been shipped knew that they had foul brood at the time of sale. I also found many colonies very badly diseased through the owners using old combs that they got from parties who had lost all their bees by foul brood. None of these men knew that the old combs were diseased, or were able to tell the stain-mark of *old* foul brood on the lower side of the cells. Comb foundation is a safe and very valuable thing to use, and those who need combs should use plenty of it, and not run any risks by using old combs from apiaries where all the bees have died.

When going through every colony in a diseased apiary I marked them according to the condition I found them in, putting one pencil-cross on the front of one hive, two crosses on another, and three on all very bad ones. After we got through examining all the colonies we knew the true condition of things by the number of crosses on the fronts of the hives. Some of the colonies I advised to be doubled the same evening, and the combs made into wax; and when the work was done in the honey season I had considerable increase made from those least diseased, and, as a rule, ended the season with more colonies than I began with, and all in grand condition.

At our annual meeting that was held in London in 1892 I said that my method of curing diseased apiaries of foul brood would, in the near future, be followed by the bee-keepers of every land. I am very much pleased to say that my method of treatment is not only followed by the bee-keepers of Canada and the United States, but is all the go in far-off Australia; and for this nice state of affairs I thank the editors of all the bee-journals. Everywhere I went in the past season to inspect the apiaries I found every bee-keeper pleased to have me examine his colonies; and for the very nice way that I was treated by every person I return to all my most heart-felt thanks. I burned two colonies in one apiary, two in another, two in a third place, and a quantity of diseased combs, and three in a fourth locality. The owners helped to burn some of the diseased colonies, and the other bee-keepers were consenting parties to have the few worthless colonies burned. I am also pleased with the way all the other bee-keepers took hold and cured their diseased colonies that had foul brood in the summer. While examining their colonies to see if the bees had enough honey for winter, some people found things not right. I found it to be pure foul brood. I explained how to cure it in the most profitable way and put every thing in order. My time, car fare, and livery hire. was $525.90.

Woodburn, Ont., Can., Dec. 6.

[Inspector McEvoy has had more experience, and more to do with foul brood, than any other man in the world. While I think I know very nearly his method of cure which gives such good results, I wish he would tell the readers of GLEANINGS his exact *modus operandi.* Indeed, if he will cover the ground fully we will make it into a little book, to sell at a nominal price. We are making quite a collection of these booklets touching the vital features of our industry; and it occurs to me that we ought to have one on foul brood from the man who, above all others, knows the most about it.—ED.]

CALIFORNIA ECHOES

BY J. H. MARTIN.

ASSOCIATION ECHOES.

The California State Bee-keepers' Association met in the Chamber of Commerce, Los Angeles, Jan. 10, with Prof. Cook in the chair, and about sixty bee-keepers present. Among those interested in bee-keeping from foreign parts were Thos. Wm. Cowan, from London, England, and W. L. Porter, of Denver, Col.

Significant. While discussing the merits of the old versus the new Union, C. A. Hatch presented the following resolution :

Resolved, That the new United States Union should absorb the old National Union. Majority for the resolution, 43; no opposition.

The bee-keepers talked right out in meeting about adulteration. A few joined the new Union for the purpose of giving aid to an organization that would prosecute adulterators. Funds is what the new Union needs, and bee-keepers should not be backward with their dollars.

The no-bee-way section was not looked upon very favorably by the comb-honey men. It was noticed that the unfavorable criticisms were mostly theory. The section has never been used here.

Mr. Mendleson was quite enthusiastic over the Danzenbaker section, and exhibited a beautiful case of strictly fancy honey which is now on exhibition in the Chamber of Commerce. Mr. M. will use the Danzy exclusively in his apiaries.

Mr. McIntyre, in his plan of increase by nuclei, can easily make ten colonies from one. Mr. Williamson went him one and a half better than that, and said that he had made twenty-five from one. We have no doubt there are bee-keepers in some obscure canyon who can do even better than that in this favored clime.

Mr. Thos. Wm. Cowan gave a very interesting address upon bee-keeping in England. Bee-keepers are evidently more thoroughly organized on the other side of the ocean than we are here; but come to think of it, they have not so much territory to organize. If our bee-keepers were all in New England we have no doubt we could do the same thing and come out ahead; but look at the magnificent distances over which we have to make an organization. It takes one's breath away to think of it.

Mendleson's plan to prevent the spread of foul brood is, to pass a law preventing the moving of a foul-brood apiary into a location where there is no foul brood. A person when moving bees should be compelled to get a certificate from a foul-brood inspector guaranteeing the good health of his bees.

Cans and cases for extracted honey are going to be cheap this year. Several competing firms are on hand with their wares.

W. T. Richardson, President of the Exchange, was not able to attend. He is quite ill, and confined to his home.

Mr. H. E. Wilder put in an appearance at the convention with some femminine wraps on one arm and a lady on the other. This lady was afterward introduced as Mrs. Wilder. We bachelors were a little dumbfounded at first; but seeing that the knot had been tied strong, and that we could not help ourselves, and that it was none of our business anyway, we did the next best thing—congratulated the bride and groom. Mr. Wilder has built a new and elegant residence in his wild canyon, where his latch-string is out to all bee-keepers. I am now wondering who is the next bachelor who will slide off in that way.

The Exchange Board of Directors will hold over another year. Mr. Stubblefield withdrew, and H. I. Morse, of Hemet, takes his place. J. H. Martin, who has served as Secretary, owing to poor health, and the fact that he never felt himself qualified to handle the honey department, desired to retire from the office, whereupon C. H. Clayton was elected Secretary and Manager.

There was also a change in the officers of the State Association. Prof. Cook, who has held the office of President for three years, was succeeded by C. A. Hatch. The Secretary, who had held the office for six years, was superseded by J. F. McIntyre. There were but few ladies in attendance at the convention. We hope that Mr. McIntyre can remedy this defect in our yearly meetings. From the way Wilder slid off into matrimony, and brought his wife to the convention, Mc. might try a little matchmaking among the bachelor bee-keepers of Ventura Co.

THE PRETTY BEE.

Pretty bee !
Speak to me !
What do you all day long,
Making honey midst the song
Of the busy bees?

Pretty bee !
Don't sting me?
I will get some money
From the profit of your honey,
Though I ne'er will do you harm.

Pretty bee !
Work for me !
Pretty bee, pretty bee, cheer up;
I will feed you sugar syrup—
You must never come to harm.

Pretty bee !
Thanks to thee !
I have made some money
From the profit of your honey,
Yet I ne'er will do you harm.

LULU E. CONNER, age 11.

BLANTON'S REPORT.

A Yield of 18,000 lbs. from 214 Colonies; the Damage Done by the Breaking of the Levee.

BY O. M. BLANTON.

A review of the past season shows one remarkable for its drawbacks, also the wonderful recuperative powers of the soil from them. The spring was cold and backward, with an excessive rainfall. The Mississippi River reached a flood-line far beyond any previous year, causing quite a number of crevasses in the levees, flooding the greater portion of the Yazoo Delta, about 3,000,000 acres, resulting in great damage. A few persons were drowned, and about five per cent of the live stock. The remainder were saved by being removed to high ground, or placed on scaffolds. The crops were destroyed, but replanted as fast as the water receded. With a favorable season it grew rapidly, and fruited beyond expectation. Where the water was in April five to twenty feet deep on the plantations, now they are covered with immense crops of cotton, yielding from ¾ to 1½ bales of the fleecy staple per acre.

I send you a photo of Lake Lee crevasse, looking northwest to the lake. The lake was originally a portion of the Mississippi River, and was caused by a cut-off about forty years ago. The crevasse occurred at night, from a violent storm, the width of thirty feet increasing within a few days to sixteen hundred, drowning 40 head of Holstein cattle and 60 head of Southdown sheep, the horses and mules having been removed.

A good crop year always accompanies a good honey season. My apiary was placed on a scaffold, and it was the first of June before I could commence extracting, which placed me two months behind. The usual time to begin is the first of April.

The season closed with a yield of 18,000 lbs. of extracted honey and 300 lbs. of wax, from 214 colonies, spring count—a good yield, considering the loss of two months.

THE BREAKING OF THE LEVEE.

Eighteen ninety-six was remarkable for the long dry season. From the 15th of April until the 5th of September there was not enough rain to lay the dust. The forest-trees and vines growing about the lagoons steadily yielded nectar. In July there was an abundant honey-dew which produced a light amber honey of excellent flavor. The occasional showers in September caused an immense honey-flow, which continued until the 20th of October.

HIVES AND FRAMES.

So much has been written in regard to hives and frames that it seems superfluous to touch on the subject; but from an experience of thirty years, working for extracted honey, I am convinced that a large hive of not less than twenty L. frames is required. For rapidity and ease of manipulation I prefer the space between the bottom-bar and the floor of the hive to be half inch, and as much between walls and frames. In construction of hives no allowance is made for shrinkage of timber exposed to the hot sun or the sagging of the bottom-bars.

The question may be asked, how about burr-combs? They are far preferable to propolis; and if the honey is extracted as rapidly as placed in the combs, there will be little trouble with them.

A top-bar should be not less than one inch wide, for a bee-keeper wants to carry thick heavy combs to the extractor, saving a large amount of work. Bees will not build as thick a comb on a ¾-inch top-bar as on one an inch wide. Give me wide top and thick wide bottom-bars, with plenty of room in the hives for rapid and easy manipulation, then I can go through my apiary with celerity. Frames are too often made for comb-space at the loss of strength and durability, which makes a dear frame for one working for extracted honey.

Greenville, Miss.

Ridge-Pole Musings

"Scale Colony;" Its Use; Recording Temperature; Weather and Colony Conditions, etc.

BY R. C. AIKIN.

I have always been interested in keeping a "scale colony." I suppose for over 15 years I have always kept a colony on scales during the honey-flow. I am fully satisfied there is much to be learned by carefully recording the work of a colony each day, together with the weather conditions and the conditions of the colony. I regret very much that my work in this line has not been more methodical and thorough, and that it is only within the last few years that I have preserved the records beyond the season of making them. I am now endeavoring to accumulate a list of records; and that this collection may become large at as early a date as possible I wish to ask any who have such to exchange copies with me. We can each make a copy of what we have, and exchange by mail.

Every apiarist, who closely observes, knows that some of his colonies do not do nearly as well as others, though apparently in equally good condition. Usually the difference is attributed to laziness or some peculiar trait in the blood of the stock, and off must come the head of the queen of the colony that is behind. I have long believed that many a fine and valuable queen has been sacrificed simply because her owner did not know the environments that caused her colony to fall behind.

How many who read these lines have decided to kill a queen because her colony has built too many burr and brace combs? I know that there is a difference in disposition, vigor, or other traits in bees; but there are so many factors that bear upon the colony, and influence results, that even the most expert apiarists will be mistaken in their judgment at times. Possibly some burr-combs are built because it is in the blood of the colony (they are predisposed) to do so; but I am just as sure that ninety-five out of one hundred or over of all burr and brace combs are caused by something else than a trait of the colony building them. The principal cause of burr-combs is improper spacing; next, lack of storage room; and, third, a surplus of wax.

Suppose that two sets of men go out to dig potatoes. One crew gets into a patch yielding 300 bushels per acre, the other crew to a patch that yields but 100 per acre; which will harvest the most potatoes? Or, send out several huntsmen to bring in game, and they, not knowing where the game is, but each striking out for himself, would you expect each to find and kill as much as the other? It is just as reasonable to expect even results from different colonies of bees as to expect ten hunters to each return in a given time with ten rabbits.

I believe that bees communicate to each other by some means, especially between members of a colony, and to some extent between members of different colonies where located close together; but where there are various blooms and fields to labor in I do not believe that the forces of all colonies are equally distributed in all fields. In order to get light upon this point it has been my desire to have a number of colonies upon scales and compare their work, though I have never been able to have more than two scale colonies at one time. To lift colonies on and off, using one scale for all, is too much work for a bread-and-butter winner.

Although it is many years that I have followed the practice of taking daily records of a colony during a honey-flow, I have not yet obtained all the knowledge sought or obtainable in that way, yet I have learned some things that seem of value.

I consider that the daily weighing fully pays for the trouble, in its being an index of the strength of the flow, that thereby I can determine more quickly what will be needed in the way of supers and super adjustment. A colony may bring nectar freely for a portion of the day, yet the average of the day's work be nothing extra. If an average colony is gaining two pounds gross daily, I know that means about one to one and a half net, say about twenty days to fill an ordinary super. The scale also tells me within a day or two whether the flow is increasing or waning. It is the surest and quickest way of obtaining a general knowledge of work being done, unless one examines many colonies frequently. The more colonies weighed, the more definite would be the index.

HONEY SECRETION BEFORE A THUNDER-STORM.

I find that there is a difference in the showing of the scale colony as between here and Iowa, in reference to weather conditions. I remember how, years ago, a cloud would show in a long line across the northwest, and gather and slowly rise for hours, and at last it would overspread the heavens and give us a wind, rain, and thunder storm. Preceding these general storms the weather was usually hot, and more or less sultry. These storms would be several hours in approaching after the first long line of dark cloud appeared above the horizon, and frequently the rain and thunder and lightning would continue from one to four hours. If such a storm came late in the evening we would expect the next day to follow it with a cool northwest bracing wind. The greatest gains in nectar were always just preceding these storms, while the day after usually gave not one ounce of gain. If the storm was quite general and severe, very little would be done till the third or fourth day after.

Notice that the conditions were, first, gathering storm-conditions, apparently for a general or far-reaching storm, behind it coming a general clearing push of cool air from the northwest. I suppose Hicks would call it a change from low to high barometer, the change following the storm being the inrush of polar air. As already stated, the greatest gain shown was just preceding these general storms —usually the last day preceding, while the day after usually showed a loss, indicating that not enough was gathered to equal the evaporation of that already in, the flow seldom reaching a normal strength till the third or fourth day after the storm.

I think I hear many saying the nectar was "washed out." I do not think so. How could it wash out? Does not almost every flower turn its face from the storm, especially if there be wind, as there nearly always was? If it was washed out, why did not the next day secrete more—even the second and third days? Then, too, why was the secretion greater *just before?* My observation shows that a sweeping change of weather conditions stops—more or less in proportion to intensity of the change—nectar secretion, even though no precipitation be present to wash out the nectar. Thermometers are very cheap, so that all may study nectar-secretion as regards temperature; but a good barometer we can not all afford. I believe the use of a barometer would far exceed in value the thermometer as a help in studying conditions governing nectar-secretion.

Last winter, while in Iowa, I held a bee convention with Mr. J. L. Strong, of Clarinda, in the southwest part of the State. He has for years kept a written record of scale colony, showing daily gain, temperature, precipitation, and general weather conditions. His records are quite complete and interesting. They show that rain does not necessarily stop secretion of nectar. If the ground is already too dry, and plants suffering for moisture, rain rather increases than diminishes the secretion. Notice, I do not say a storm, but *rain* increases secretion if the plants are *needing the rain.* Local showers are quite different from the sweeping storms previously described. On the other hand, his record shows that rain in *excess of needs* unfavorably affects secretion.

It will not do, however, to apply the principles in the preceding paragraph too loosely. Some plants require more moisture than others. The foregoing conditions have particular reference to white clover. I feel quite confident that heartsease will bear more moisture than the clover, though I am not positive of this. Our Colorado cleome will yield when growing out of ground that would seem too hard and dry for any thing to succeed in, and I think it also delights in a rather cool atmosphere.

RAPID CHANGES IN WEATHER AND TEMPERATURE IN COLORADO.

Weather conditions are much more rapid in their changes here near the mountains than elsewhere, and changes are harder to forecast. We have at our postoffice a government signal-service report or forecast. The mountains so affect storms by deflecting or breaking the air-currents, and in other ways affecting the conditions, that the forecasts are not nearly so certain as at points more remote from the mountain districts. Our general storms east of the mountains, that come with a steady sweep and lasting effects, almost invariably come from the northeast, with damp and chilly winds, laden with moisture, I suppose from the lake regions. By all odds the bulk of precipitation comes from these northeasters, and, as well, our changes to cold. One would naturally expect the west winds coming from the snow-clad mountains to be cold; but the fact is, such bring a rise in temperature. I am drifting from my subject, and will return.

I find that there is quite a difference between here and the Missouri Valley. Changes here, particularly in temperature, are very rapid. We think very little of a change of 40 or 50 degrees in 24 hours. Even in June and July, in the midst of the honey season, the thermometer will often register 40 to 50 in the early morn, and at noon be from 80 to 90, and an equally rapid fall in the evening. You would naturally expect these extreme changes to affect the bees very unfavorably; but you should not forget that neither cold nor heat is as penetrating in this very dry atmosphere as in more moist climes. In a calm clear day bees fly freely at 40 to 50 degrees, yet snow not exposed to direct rays of the sun will scarcely melt at all. As I write this the first days of January, the thermometer on the north side of the house has been registering, several times, between 50 and 60, bees flying freely, yet snow of a two or three inch fall is yet visible on that same north side, not many feet from the thermometer. I will here give a statement in brief of part of the temperature records for the past summer.

The honey-flow began June 12th. The 31 days from June 13th to July 13th, inclusive, was the extent of my alfalfa honey-flow. The temperature was recorded morning, noon, and night, taking 6 A. M. and 1 and 7 P. M. as the time. The morning entries varied from 5 to 7 o'clock, but averaged about 6. The noon entries were nearly all made at 1 P. M., and the evening at 7. The average noon temperature was about 85½, the lowest being 70, 3 days out of the 31; 2 days 75, and one day 78. The highest was 100, and over 90 for 11 days. On June 18th there was a little frost in the bee-yard; but at 6 the temperature was 45, the noon temperature being 75. The average morning temperature at 6 o'clock was 53. The average evening temperature was 68, the lowest 57, and the highest 84. Notice that the evening temperatures were taken at 7 o'clock, which was before sundown those long days. After sunset the mercury would drop several degrees in half an hour or so.

In the next article I will continue the subject of records, and will give something of an analysis of the 1897 and previous records.

Loveland, Colo.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

ABOUT BASSWOOD BLOOM.

Question.—We had a full bloom of basswood this year, but for some reason the bloom failed to yield any honey. Is it not reasonable, therefore, to suppose that the failure to secrete honey may cause the trees to bloom profusely another year? If we could tell about these things, it would be an item of importance to many bee-keepers who live in the basswood belt.

Answer.—At first glance, it might seem reasonable to suppose that, where nature was foiled one year, she would make up the loss the next; but, really, was nature foiled in any way, so far as the basswood-trees were concerned, by the failure of the secretion of nectar? If no seed was perfected, then the results which nature desired to accomplish did not mature; but in all of my experience I have never known the basswood to fail in yielding fruit (seed), no matter whether nectar to any amount was secreted or not. I firmly believe that no seed would be perfected with the basswood, or very little at most, without the aid of insects to pollenize properly the blossom; but I have yet to see the time when there were not bees and other insects roaming over the blossoms in numbers sufficient for the full fruitage of this tree, no matter whether any basswood nectar was accumulating in the hives or not; and if abundance of fruit is borne, nature is not foiled in her undertaking. If I am correct, the producing of an abundance of nectar or the entire failure of nectar has no bearing in the matter of fruit-yielding whatever, only so far as it attracts insects which further a more perfect pollenization of the flowers. In other words, the nectar itself in no way enters into the vital fluids which go toward the perfecting of the seed and the husk, or that which incloses it. Many seem to suppose that a failure of the perfecting of the blossoms into fruit, during any year, has a predisposing influence toward a more profuse blooming the next year; but I doubt whether such have ever stopped to analyze their thoughts on this subject. If I am correct, such a failure can have no bearing on the subject whatever, as the embryo blossoms or an entire absence of the same is found in the partially perfected product for the next year, before the present season's blossoms open; that is, the embryo blossoms are all formed in the little buds at the base of each basswood leaf which appears in full perfection, although not in full size, before the flowers then on the trees open to invite the bees to a sumptuous feast, or open without that feast being spread; hence it will be seen that, if through any failure of fruitage greater strength or vigor is added to the tree, it can not possibly show itself earlier than two years from the time the failure occurred. It is always well for us to stop and carry any thought to its logical and legitimate end before we begin to prepare for some supposed thing which a little logical reasoning would convince us could never come to pass.

ITALIANS OR HYBRIDS.

Question.—If you were breeding especially for honey-gathering purposes, which would you prefer—the golden Italians, dark ones, or hybrids? If hybrid bees, how would you breed them for best results?

Answer.—Volumes have been written on this subject, and the matter is not fully settled in the minds of many at the present time. Some of our very best bee-keepers tell me that they do not know which is best; but from my standpoint a true solution depends upon which we are producing—comb or extracted honey. If I were producing extracted honey altogether, I think I would select the darker Italian, or those produced from queens reared from an imported mother, allowing these queens to mate with whatever drones there were in and about the apiary, paying no attention as to whether these drones were from Italian, hybrid, or black stock. If I were working for comb honey exclusively, then I would procure a good queen of the golden variety, rearing all queens from her, and allow them to mate with any drones they might chance to meet, the most of which would, without doubt, be from an entirely different "blood" from themselves, which would give a direct cross. Such direct cross always gives the greatest vigor, and, as the question is asked, I should not care one cent whether my yellow queens mated with drones from black or hybrid stock, as all of my experience goes to prove that thoroughbred golden Italian queens, mated to drones of either black or hybrid stock, give bees equal to the very best for comb-honey purposes. But if I could conveniently hinder the thing I should prefer not to have these queens meet drones from young queens reared from imported mothers — not because they would not give bees just as vigorous, and of just as good honey-gathering qualities, but for the reason that, as a rule, workers having much imported "blood" in them do not cap their honey nearly so nice and captivating to the eye as do those having more of the golden, hybrid, or German "blood" in them.

To sum up I would say, first have your queens mate with drones as distantly related to your queens as possible; second, use queens as closely related to imported Italian stock as possible, where working for extracted honey; for there are no bees in the world, in my opinion, that excel those one generation from imported stock, for honey-gathering. Third, where white capping of combs becomes one of the great objects to work for, as is the case when working for comb honey, then choose the golden Italians, on account of their qualities in that direction; while at the same time they are in no way second to Italians from imported stock, as to their honey-gathering qualities. Try these things for yourself, until you have proved which is right, and then, as the conductor told the little boy in the sleeping-car, carry out what is right, if it stops the whole train.

Among the passengers on a sleeping-car going across the continent was a father and mother with a bright beautiful boy of about six or seven years. The little fellow, by his gentle manners and courteous behavior, soon became the general favorite. Supper was over, and all were well started out into the darkness of the night. The berths were being made up as the new conductor entered, saying, in a rather stern voice, "Tickets, please." As the attention of the passengers was attracted to him he was seen to stop suddenly. Before him was the little favorite in his night-dress. The boy's mother said, "Robbie, can't you offer your prayer in bed to-night? There is no room in the aisle where so many are passing." But he answered, "No, mamma; I feel that, if I would be right, I must kneel down to pray." The conductor, who stood listening, said, "Yes, my boy, you may kneel down in this aisle to pray, even if I have to stop the train for you." While the dear little fellow kneeled, and with folded hands prayed to the great loving heavenly Father, the conductor, removing his cap, stood reverently, while the tears were seen to glisten on his eyelids. The petitions of all praying hearts in that car were more fervent that night, and some forgetful ones were led to do right by once more embracing the long-neglected privilege of prayer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE FENCE AND THE BIG HIVE.

Friend Ernest:—I am interested in the "fence" question. In my experience I have found that the bees will produce more comb and honey if they can work in a mass. The poorest results are from cramping them in small one-pound sections. As I retail the most of my honey I have clung to the 2-lb. section on this account. The slatted separator is no doubt good, but I have been thinking along friend Pettit's idea since the subject came up, with this difference: Some time ago we had a honey-board made with slots similar to that of the present zinc. Why can't you take your separators, steam them, and run them through the perforating-machine that you put the zincs through? If they curl they could be dried under pressure, or perhaps punched without steaming. That would give us a ventilated separator that would allow of the warmth of all the bees circulating throughout every part of the super, and would allow the bees to move quickly to the sections where the combs were ready to receive the worker's load when it comes in. With the small separated spaces, I have often thought that a loaded bee has sometimes to make an extended journey to find a section ready for it.

I am feeding my bees. I find them all very light save the bees in the hive with double brood-chamber. There was a case of extracting-combs left on it last fall (a common practice in California). I went over the bees last week and found hive after hive very light, till I reached that big hive, when, to my surprise, I found both lower bodies well filled, and the combs in the super packed solid with beautiful honey that they had gathered after we ceased extracting. Hurrah for the roomy hive, in this locality! E. H. SCHAEFFLE.

Murphys, Cal., Jan. 25.

[I am well aware that honey-boards have been made by running strips of thin veneer wood through a zinc-perforating machine; but so much of the wood is cut out that what is left is very weak and flimsy. Then, moreover, it is impracticable to punch out wood in the same way we do metal. It *can* be done, but the edges of the wood will be rough and stringy. Our present plan of using slats in a fence separated a perforated-zinc distance apart is easier to make, and stiffer. If the Pettit divider is a good thing its form of construction will be between some form of fence, or plain board perforated with holes. The time will come when bee-keepers everywhere will have more respect for big hives than they do now. I shall use in our out-yard, same as last season, two-story eight-frame hives, even for comb honey.—ED.]

HEAVY TESTIMONY IN FAVOR OF THE DEEP OR LARGE ENTRANCE.

Allow me to acknowledge my indebtedness to your valuable paper for the deep-entrance idea. It is, I believe, worth more to us bee-keepers here in the South than any thing we have had in the way of improvements for several years. It has entirely prevented lying-out this past summer. It has helped to control swarming; for, when used on 8-frame hives, they swarmed very little, while those without the deep entrance have all swarmed, some of them twice. It has increased the honey-yield by preventing laying out, and consequently keeping the bees in working order. On hives with deep entrances, ten per cent were short of stores Jan. 1, while on those with ordinary entrance, 33⅓ per cent were short the same date.

The experiment gave another interesting fact which was noticed when the wedges were removed—10 per cent of the frames had the combs carried down to the bottom-boards. In every instance these frames had bottom-bars ¼x¼ inch. Half of the frames used had bottom-bars ¼x¼ inch, and half ¼x¾, with the above result.

First pollen is coming in to-day from tag-alder. Last year the first pollen was brought in Feb. 14th, from the same source.

JAMES L. MONTGOMERY.
Americus, Georgia, Jan. 12.

[This is valuable, coming as it does at the beginning of another season when many, perhaps, are debating whether it will pay to change to the large entrances.—ED.]

HOW TO CONTROL SWARMING AT OUT-YARDS WITHOUT KEEPING AN ATTENDANT.

Ernest:—Will you please tell me the best way to manage an out-yard—that is, to prevent swarming where there is no one to hive the swarms all the time? Would it not work well to put on zinc entrance-guards with our Danzy bottom and ⅞ entrance, letting them extend a good way up the hive so as not to hinder ventilation too much? Dr. Miller has out-yards. I wish he would tell through GLEANINGS just how he manages them.

J. F. BEELER.
Clear Springs, Tenn., Jan. 18.

[This question is a poser. There is no method that gives entire satisfaction; but I will tell you how we would proceed, and how, in fact, we worked our out-yard last season. All queens' wings are clipped, or else perforated zinc is put over the entrances of colonies with queens not clipped. Toward the swarming season I put on an extra hive-body containing empty combs or frames of foundation with a frame or two of brood from below. Empty combs are put in place of the brood-frames removed from the lower story; but prior to this I aim to have the colonies rousing big ones, and the queen a good one. After the bees have pretty well filled up the upper story with brood or honey I sometimes put a comb-honey super on top of the whole, or I may remove the upper story, crowd all the brood as far as possible into the lower story, and put two supers of comb honey on in its stead, as one super would not hold the bees. The combs containing honey are set aside for the purpose of extracting, or for wintering-stores. Colonies so treated have rarely swarmed for us; and while it is true some honey goes into extracting-combs that might have otherwise gone into comb-honey supers, the general good working condition of the colony, and, in the generality of cases, lack of a desire to swarm, I think more than compensate for this. Last season I had a large number of two-story colonies at our out-yard that filled two and three supers of comb honey while some of the single-story colonies filled but one and two, and swarmed in the bargain. In the upper story, extracting-supers had from three to six extracting-combs of sealed honey. These upper stories were often removed, and in place were put two comb-honey supers, and as a general rule the bees would go into them with a rush. To have put on simply one would have crowded the bees and caused them to hang out of the entrance. And this reminds me that one of the important requisites in keeping down swarming (I will not say prevent it) is to give large entrances; and if perforated zinc is used over them there must be enough surface of metal so that the entrance itself is not contracted. The new 1898 Tinker-zinc entrance-guards or Alley traps will give the freest kind of ventilation.

Some others would not proceed at all on the plan I have mentioned. They would use single-story colonies, cage all queens at the approach of the honey-flow, then in eight or nine days shake all the bees off the combs and destroy all the cells. Doolittle, on page 16, reports trying a similar plan, and says it is a success; but my own experience seems to indicate that a colony with a caged queen, or no queen at all, is *apt* to sulk. They appear to feel as if something were wrong, and won't work. Yes, by all means I should like to have Dr. Miller or any one else tell his way.—ED.]

OBJECTIONS TO THE MARKS METAL-SPACED FRAMES.

The objections to the Marks-Hoffman metal-spaced frame, as illustrated in Jan. 15th issue of GLEANINGS, is that the cost is too much, and there is too much of a death-trap; also the frames can not be reversed endwise. A frame is not practical unless it can be reversed endwise. I have tried all of these kinks for 20 years, and I will bet the staples and end-spacers, as I use them in my hive, against any other form or style of frame yet invented, that I can handle a half more hives the way I use them, in the same time, than any other style of frame or hive yet invented. I am ready, and will prove this at any time by actual trial in the bee-yard. I do not want any death-traps around me. All frames that are constructed on the Marks style are death-traps, and should not be used in these hard and close times, and especially in the bee-yard, where time is money. I think you made a mistake when you shortened the shoulder to the Hoffman frame. It does not leave projection enough to grasp with the fingers.

F. BOOMHOWER.
Gallupville, Scho. Co., N. Y., Jan. 23.

[With regard to the shortening of the top-bar to the Hoffman frame, see pages 9, 11, and 12, of Jan. 1, this year. As to the metal-spaced Hoffman, I don't know enough about them to speak from experience.—ED.]

WINTER VENTILATION.

I have gone over my bees on a frosty morning, and found them clustered along the bottom-bar with the frost close to and at times showing on the hairs of the bees. As there was an abundance of room above, why did the bees select the coldest place in the hive? Those that winter indoors tell us that the bees cluster below the bottom-bars. This is not an accident, and I have concluded it is for want of ventilation. The top of the hive is hermetically sealed, the air grows foul, and the bees leave the stores and warmth of the upper part of the hive for the pure air to be found below. I winter my bees on their stands. So far this season the thermometer has stood at 40° to 80°, but we are now apt to have it crawl down to "freezo" any night, and remain there for weeks. My hives all have ventilators in the rear of the hive, just below the lid. To leave these open in winter would make the hive too cold in a protracted cold spell. My bees must be allowed to fly. To hit the combination I have concluded that a ventilator in the front of the hive, not over ½ inch in diameter, just below the lid, will give the hive the needed ventilation without subjecting the bees to the draft, as the air would circulate from the entrance up the front and out of the ventilator. Gallup pointed the way when he wrote: "The thermometer for sixty days in succession was not above 10° below zero, and for eight of these days the mercury was frozen; yet my bees, in box hives, with a two-inch hole *in the top*, and *the bottom plastered up tight*, came through in excellent condition." The italics are mine. Unfortunately, Gallup does not say how he protected that top hole from snow and mice. Gallup's system is suited only to those sections where the bees do not fly throughout the winter; but it shows, what we have all found in ventilating our rooms, that the ventilation should be *at the top*. E. H. SCHAEFFLE.

Murphys, Cal.

TWO-STORY COLONIES; DEAD BEES ON THE CELLAR BOTTOM.

1. I read that, in working for comb honey, it is a good plan to put an empty hive of comb or foundation under the old hive in the spring, and then take it away at the beginning of the honey-flow. Now, suppose the queen has begun to lay in the lower story, and when you take her away at the beginning of the honey-flow what do you do with the brood?

2. Would this be a good plan in raising queens? Take a frame of your choice larvæ; put it into an empty hive with a frame of honey and pollen and two frames of hatching brood and the bees that remain on the combs when taken from the hives. Close up the empty space with division-boards, and set the hive on a new stand.

3. How many bees should be swept up from the cellar bottom each month, the cellar containing seven colonies?

4. How can you find out whether the bees have dysentery or not by examining those taken from the cellar bottom?

ROY O. CLARK.

Lake Crystal, Minn., Jan. 3.

[1. We have never practiced exactly that method; but brood can be given either to weak colonies or be used for rearing nuclei; but my plan would be to let them keep the brood. The two-story double-decker colonies are the kind that get honey for us when those in the single story do little or nothing in the spring.

2. Yes.

3. This is a hard question to answer. In a cellar containing 75 colonies there might be only a pint of bees to sweep up, and there might be a bushel a month. There will be far more dead bees on the cellar bottom in the fore part of the winter than during the latter. It all depends upon how skillful one is in wintering, and also whether the temperature of the cellar can be properly regulated. If the temperature were too high or the cellar not properly darkened, I should expect a good many more dead bees than when the temperature is somewhere about 45.

4. If bees have dysentery they will spot the hives up badly with a sort of brown foul-smelling drops. If they have the disease you will know it.—ED.]

BEES WINTERING WELL; A GOOD CROP OF HONEY.

My 125 colonies in the cellar are wintering nicely so far. My crop of 3 tons of comb honey was fine, and all sold at home for 10 cts. straight, and cases returned. Clover burned out some, but I think we are all right for 1898.

Sheffield, Ill., Jan. 26. A. L. KILDOW.

THIRTY COLONIES IN A SOLID SNOWDRIFT.

Thirty of my colonies are in a solid snowdrift, covering them completely, The other three rows are in soft snow two feet deep. They are all packed in sawdust alike. It will be a good test of snow-wintering if I decide to let them remain as they are; but I think I shall open up the entrances in a few days.

Farwell, Mich., Jan. 28. T. F. BINGHAM.

HONEY SNOW CREAM.

One cup rich sweet cream; ⅓ cup extracted honey of decided flavor; mix and cool thoroughly, then stir in fresh, light, feathery snow till it crumbles, and serve at once. If I am not mistaken you will say it is better than any ice-cream you ever tasted. The above will be enough for four good dishes.

C. J. BALDRIDGE.

Kendaia, N. Y., Jan. 26.

TARRED PAPER IMPARTING ITS ODOR TO HONEY.

The question is asked in GLEANINGS, "Will tarred paper affect bees?" I will say that I had one crate of 40 lbs. of my best basswood honey spoiled for table use by being covered with a small strip of that kind of paper; but the bees would steal it just the same. It's no good to-day, for it smells and tastes of the tar. G. H. BABCOCK.

Brookfield, N. Y., Dec. 30.

[While the bees do not object to tarred paper, it is no doubt true that, when placed over honey, it will impart to it some of its tarry odor. Honey will appropriate to itself odors very rapidly and that is the reason why old square kerosene cans or old bad-smelling barrels should not be used for storing it in.—Ed.]

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

J. C. T., Pa.—I do not know what a fair rental for bees should be. They are sometimes kept on shares, if that is what you mean. One party furnishes all the bees and hives for the start, and the other all the labor. At the end of the year the net proceeds are divided equally, each sharing equally in the cost of shipping-cases, packages, and hives, frames, etc., for increase.

J. L., Cal.—Your method of providing ventilation to the hive, and thus preventing clustering out, by means of raising the cover, is quite old. It works satisfactorily, however, in a good many cases; but it is far better to keep the super as warm as possible, and secure the necessary ventilation from the bottom, either through a large entrance or by raising the hive up on four blocks off from the bottom-board.

L. A. S., Quebec.—Yes, you can use large drygoods-boxes as winter-cases over single-walled hives; but the space between the box and the hive should be packed with some loose material such as straw, leaves, or shavings; and then it is essential that it be kept dry. Some use large boxes, and set the hives down in the box, and, after making a passageway from the entrance of the hive to the outside of the box, packing-material is poured around and on top of the hive; the box-cover is set in place, and on the cover is tacked a large sheet of building-paper.

W. H. K., Cal.—The idea of using the ordinary butter-bowl on the plan of a Hill device is quite old. We have used the ordinary butter-dishes in which grocers put up butter, a good many times. As the dishes are all of a limited size, we have sometimes used two and three of them above the brood-frames. In some instances they have been half filled with hard candy, and inverted right over the brood-frames. As the candy is eaten out it makes a nice clustering-room for the bees. The inverted wooden butter-dish in lieu of the Hill device is certainly a good thing; and if they could be had of a larger size we would discard the Hill device entirely.

L. K., Ill.—You fear that we are not making the cleats to our fences thick enough—that they are too thin to allow the bees to pass from section to section; that, moreover, you could not easily push a dead bee through the space allowed by the thickness of the cleats. I was a little disturbed at first, fearing our wood-workers had been a little careless and made the thickness of the cleats less than $\frac{2}{12}$ of an inch. I went through all the departments, measuring the cleats myself, and found in every instance that 12 would make exactly 2 inches. The foreman of one of our departments has been very particular to have these exactly right.

It is possible that the cleats in the hives sent you were not $\frac{2}{12}$ inch, but I hardly think so; $\frac{2}{12}$ measures in hundredths 16⅔. From 16½ to 17 one-hundredths is the width of ordinary perforated zinc. When we made up the zinc we endeavored to make it exactly 16½ hundredths, and that has been the size of our zinc for years. The Tinker zinc measures about $\frac{17}{100}$, and, if any thing, is a little larger.

Years ago, when I was testing perforated zinc, I found that, though the zinc was perforated as narrow as $\frac{16}{100}$, the bees would go through very nicely, but when filled with honey it impeded them a trifle. Now, when you bear in mind that the thickness of our cleats is fully as wide as the perforations in the zinc, you will readily see that a bee can go through the space. Bear in mind that $\frac{2}{12}$ of an inch measures 16⅔ hundredths, and bees can squeeze through $\frac{16}{100}$.

I have not a bit of doubt that it would be difficult for you to push a dead bee through a $\frac{2}{12}$-inch space, but that would hardly prove that a live bee could not go through that space. A live cat, for instance, to use a homely illustration, can go through a hole that neither you nor I could shove the same animal through when dead. Furthermore, the slats on the fences now drop down a trifle from the top of the section, and this will also have a tendency to widen the space.

With regard to the thickness of the section-holders, it is true the old section-holder will not fit in the new super; but the advantage of the new holder is such that, when we were making such a radical change, we thought we might just as well make it right. The new one is easily removed from the super, and leaves a dead-air space between the super end and the section-holder end.

Thousands of our customers are buying the new supers as their first surplus arrangement, and they get it as the very best. Now, to accommodate those of our old customers who have old-style supers we make and advocate what we call our "S" style of fence. This obviates all the trouble you refer to, and is the style of fence, in my judgment, you had better have, unless, perchance, you were expecting to buy a large lot of new supers, which possibly is not the case. The "S" style of fence is shown on page 13 of the catalog we are sending you, and a little larger view in the January 15th issue of Gleanings.

With regard to the shipping-cases, I would state that we are making these for both plain sections and the old-style sections—see p. 23 of catalog for prices on these, and also particulars regarding the new shipping-cases and the number they will hold.

With regard to the looks of the plain section, I would refer you to what L. A. Aspinwall writes in the *Review*, and also what W. D. Soper writes regarding the Aspinwall sections, in Feb. 1st Gleanings. I think we shall find no trouble but that they will hold their own in any market against old-style sections.

EDITORIAL
BY E. R. ROOT

EIGHT extra pages again this issue.

THE prospects for a crop of honey in California are very poor. Bee-keepers on the coast are looking anxiously for the big rain that has not come. If I understand the situation, if it does not come pretty soon there will be little or no '98 California honey on the market.

IN our Beginners' Question-box (by the way, questions are being thrown into this box by professionals) some questions are asked with regard to the fence, whether or not the cross-cleats are not too thin to permit the bees to pass between the slat and edge of the section into the next super above; and as this has come up of late in our correspondence several times, I have taken pains to cover it fully in our Question-box, which see.

BAD SPELLING AND GRAMMAR.

MR. HUTCHINSON, in the *Review* for January, referring to communications that come from bee-keepers who, though well versed in their business, and able to give valuable facts, and yet hesitate to write because of defective spelling, penmanship, or grammar, says, "Book-learning is good, but it is not every thing." And then he adds: "I hope no one will ever hesitate one moment about writing me because of a lack of book-learning." That is just the way I feel about it. I want my friends to write to me, no matter what their spelling or schooling has been. Although I have on my desk at this very moment more letters than I can answer *promptly*, I hope to catch up soon.

BEES WINTERING WELL; A PECULIAR WINTER.

BEES seem to be wintering well from present indications. The winter in Ohio has been greatly varied. On the 1st, 2d, and 3d of this month the mercury ranged from 6 to 10 below zero; then the weather moderated till yesterday, the 10th, when, by way of contrast, we had balmy summer air. Overcoats have been cast off, and windows are open. Prior to our zero weather we had several weeks of damp chilly weather. If you were in our town to-day (Feb. 11th) you would think it ought to be spelled *Mud*-dina. Mrs. R. thinks so, at least when our seven-year-old comes home from school. By the way, if there is any mud to be found, did you ever see a boy who could not find it *without half trying?*

A $2.00 SECTION-CLEANER.

WE have just got on track of a little machine that can be sold for $2.00, for cleaning sections, that I *think* will do the work as well and perhaps as rapidly as any machine ever invented. Years ago, when A. I. R., then familiarly styled "Novice," was at work inventing his all-metal honey-extractor, he utilized the gearing of a paring-machine to gear up his extractor. Well do I remember the days away back in the early '70's when this first all-metal machine was constructed and put in operation, and of "turning the crank" of the paring-machine extractor.

But what has all this to do with the $2.00 sanding-machine or section-cleaner? Only this: There is a big firm putting out a geared-up emery grinder that, to my mind's eye, with a very slight change, will be "shoost right and shoost de ding" as a section-cleaner.

THE REVIEW OUTSTRIPPING ITSELF.

THE *Review* is far outstripping its past record, excellent though it was, in the way of dishing up interesting and valuable facts on the subject of bee-keeping. The editor has called to his aid the camera; and if any one knows how to use that instrument it is Bro. H. The splendid spurts he has made in spite of recent sorrows are marvelous. I almost wonder if he has not even surprised himself. His work has been so good, indeed, that a rival like myself ought to be jealous; but somehow I do not have any inclinations that way at all. *I just feel glad of it.* If Bros. York and Hutchinson give GLEANINGS hard competition, I will work all the harder to keep up with them, and, if I honestly can, I will try to get a little ahead of them.

WILL COMB HONEY BE RIDGED OPPOSITE THE SPACES IN FENCES?

OCCASIONALLY, in our correspondence, fears are expressed that there will be ridges in the comb honey opposite the opening between the slats in the fences. I have investigated this matter very thoroughly, read every thing carefully that has appeared on the subject, questioned very closely bee-keepers who have used the fences, and I have yet to find a case where there is ridged comb honey when the slats are spaced close enough. They should not be any further apart than the width of the perforated zinc, which in round numbers is $\frac{2}{12}$ of an inch. If any thing, the distance should be less rather than more. The Danzy fence that we sold last season had slats spaced $\frac{3}{8}$ of an inch apart, and in some instances I happen to know the comb honey was ridged slightly, opposite the spaces. Two or three have written us that $\frac{1}{4}$ inch is quite close enough—that there will be no ridges; but we prefer to be on the safe side, and make it $\frac{2}{12}$ instead of $\frac{3}{12}$. In the slats that go to make up the fences of our Ideal super, we have spaced them only $\frac{1}{8}$ inch apart; the spaces in the fences of the regular super are $\frac{2}{12}$ as nearly as we can get it.

A COMPLAINT AGAINST A COMMISSION HOUSE.

ON p. 18 of our Jan. 1st issue I had occasion to make favorable mention of two or three commission houses whose names appear in our Honey Column. Among those names especially referred to was that of R. A. Burnett &

Co., of Chicago. One subscriber, seeing that, immediately wrote them after this fashion :

> *Messrs. R. A. Burnett & Co.*—Last fall I had more honey than I could sell here at home, and wrote to you, requesting you to sell it for me, and to learn what your commission was. You answered in this style—that you would not advise me to ship to your overstocked market ; that honey was not selling for much, and intimated that you did not want it any way, so I did not send it. How strange, you have sent clear to California for a whole carload to supply your overstocked market ! I suppose almost any thing is considered fair dealing for a commission merchant. How funny ! I guess I shall have to jog GLEANINGS a little. If you did not want my honey you could have just said so, plainly, without adding something else, I will not say just what.
> L. A. S., Ill.

Burnett & Co. forwarded this to us, adding, "See what your kindness has got us into." Knowing something of the deals referred to I took it upon myself to write to Mr. S. direct, and this is what I said :

> *Mr. L. A. S., Ill.*—Your letter to R. A. Burnett & Co. was forwarded to us. The fact of the matter is, R. A. Burnett & Co. handle several thousand pounds of honey per week ; and the deal that we referred to editorially was only one out of many. The very fact that R. A. Burnett & Co. wrote you, advising you not to ship the honey at that time, as the market was overstocked, seems to us is evidence that they were acting in good faith Such a policy is a most pleasing contrast to the way of some of the commission houses who always invite shipment, adding that the market is good, and that honey will bring a good price ; then when the honey is actually sold they make returns of a half, or even less, of the figure quoted. R. A. Burnett & Co. were honest enough to tell the exact truth ; but right here you will doubtless wonder why they did not take your honey, instead of sending clear off to California for a carload. If they had offered you the price they paid for that California amber — considerably less than 4 cents—you would have dropped them like a hot potato. The fact was, they probably had a demand for just that kind of honey ; and if they reported to you that the market was overstocked, they certainly implied, if they did not say so, that it was for the kind of honey you proposed shipping. If we are correct, R. A. Burnett & Co. handle annually hundreds of tons of honey. Considering the magnitude of their business, it is a marvel to us that they get along with almost no complaint ; and in the light of what we have said, your letter certainly can not be regarded as a complaint.

I sent a copy of the above reply to Burnett & Co., and they returned it, stating that the facts as I have put them were essentially correct.

THE NUMBER OF CELLS OF WORKER COMB TO THE LINEAR INCH ; TELLING LIES AND BELIEVING THEM.

It has been said over and over again in bee-books and bee-journals that there are five cells of worker comb to the inch, so that we have come to believe it. This reminds me of the story of the old Indian medicine-man who had for so many years told his people he could catch rifle-balls in his mouth that he actually came to believe it ; and, accordingly, to prove his assertion, he walked out within rifle-range of the fort, and was shot down. The poor silly fool had told this lie so many times that he *really believed it*. Lately we have been doing some measuring of natural worker combs, and the Indian story above came forcibly to my mind. Is it possible we have told this five-cell yarn so many times that we have come to believe it also ?

Years ago, when Mr. Weed made his honey-comb he so arranged the dies that there would be five cells to the inch ; but somehow or other it was just a trifle under it. Samples of this comb were sent to us, with the request that we try it ; but the bees would never breed in it or use it. He finally settled down, after many careful measurements, on $\frac{210}{1000}$ as the correct width between the parallel sides of a worker-cell. Recently this question came up again in this way : Mr. Weed showed me some brood foundation that he had been making on a set of new dies.

"Why," said I, "I am afraid you have got that a little too large."

I immediately produced my rule and began measuring.

"Why, yes ; don't you see," I said, "there are a little more than $9\frac{1}{2}$ cells to the 2 inches?"

"Yes," said Mr. Weed ; "but you know that the average worker-cell is a trifle larger than $\frac{1}{5}$ inch ?"

"No," I said, and turned to Cheshire, and found that even he *assumed* that there were 5 cells to the inch ; but, considering the shape of the cells, he figured there would be actually $28\frac{13}{15}$ to the square inch.*

"Well," said Mr. Weed, "the best way is to go to the bees."

With that he went out into the apiary and hunted up some pieces of natural comb, brought them in, and measured them before my eyes. Five cells measured all the way from $1\frac{1}{16}$ to $1\frac{1}{8}$ inches. In no case could we find exactly 5 cells to the inch, measuring on a line at right angles to the parallel sides.

LARGE ENTRANCES AND DEEP SPACES UNDER BROOD-FRAMES.

In all my trips among bee-keepers I have noticed a tendency toward larger entrances. In the various correspondence that has been coming in from time to time there have been references to the value of freer and better passageways into the hives ; and you may remember that Dr. Miller only recently told us (what he had not done before) that he was in the habit of raising his hives up on four blocks to prevent the bees from clustering out, and to discourage (but not necessarily to prevent) swarming. Mr. Danzenbaker has for two years urged the importance of deep entrances, and he has accordingly had his hives constructed in that way—or, rather, I should say they have reversible bottom-boards which, when used one way, would give the regulation $\frac{3}{8}$-deep entrance, the full width of the hive, and the other $\frac{7}{8}$. We were not then willing to adopt his bottom-board, for I had a fear that the bees would build their combs down, and make bridges of some sort up to the bottom-bars of the brood-frames. He acknowledged that they did so sometimes, but the cases were rare — not enough to give any annoyance or inconvenience.

All of these things for years have been causing me to think and observe more and more all along these lines. Accordingly, last season, in our own apiary, experiments that I conducted myself personally satisfied me that entrances might be, many times, enlarged with advantage and profit ; and accordingly this season we adopted what had proved to be satisfactory—the Danzenbaker reversible bottom-board for our own hive, affording a ⅜-inch entrance one way and ⅞ the other. So much in favor of the deep entrances, and now for the other side.

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* Cook is the only authority I have run across who says worker-cells are a little more than $\frac{1}{5}$ inch.

G. M. Doolittle and O. P. Miller, in the *Progressive Bee-keeper*, do not agree that there are advantages in the use of a deep entrance for summer use. The latter says when there is more than a bee-space under the frames the bees will build knots of bee-glue up so they can reach them; and while admitting that such entrances will to some extent do away with swarming, it will not do so absolutely. Mr. Doolittle quotes J. L. Hubbard, in GLEANINGS, who says that bees, instead of clustering out in front of the hive, will cluster in the deep spaces under the frames; and then he adds that this was his experience—that bees do not cluster out *in front*, simply because they have a more convenient place *inside;* and that the idea that swarming can be overcome by raising the hive up from the bottom-board is a myth. He believes that a ⅜ space under the brood-frames, with a properly shaded entrance, is all-sufficient, and then winds up by stating that he himself uses a reversible bottom-board; but the deep space is used only for winter, and not for summer.

There, now, friends, I have tried to give you both sides of the whole matter, without fear or prejudice. So far as we are concerned, it does not make the difference of a picayune, because the bottom-board that we have adopted for this season is reversible, and may be used either side up. If one believes, for instance, that a deep space under the frames is a good thing, he can try it to his heart's content. If he does not believe it, then he can use the entrance the other side up.

HONEY IN PLAIN SECTIONS; IS IT ARTISTIC? OBJECTIONS TO THE PLAIN SECTION AND FENCE.

MR. T. F. BINGHAM, for whose opinion as a bee-keeper, inventor, and mechanic I have great respect, is opposed to the plain sections. Besides requiring new separators, he thinks that the merchants and clerks will have to be taught how to handle the honey; that even the shipping-cases will have to be more perfect or the one-piece section abandoned; and then he adds:

> There is also a touch of art in the matter. Any one familiar with architecture knows the beauty of projecting edges and borders. Do the advocates of this formless "chunk honey" realize how thin, meager, and lean it will look? Take away the projecting edge from a section of honey, and we see sweetness without ornament.

The last point is best answered by the engraving which we have reproduced from the *Bee-keepers' Review*, and which appeared in the same number with Mr. Bingham's article. If he had seen that photo of Mr. Hutchinson's I do not believe he would have written the paragraph which I have given above, to the effect that honey in the plain sections is a failure from an artistic standpoint. Why! it seems to me the honey in the bottom row of sections, shown on p. 128, is much prettier—certainly more artistic—than the honey in the top rows. It is not the *section*, with or without its projecting edges, that should command attention, but it is the well-filled and well-sealed *honey*. In a word, it is not what *we* think looks best, but what sells best. Mr. Aspinwall says the honey in the bottom row brings a higher price.

In answer to the other points, it is true that plain sections do require new separators; but *if* these fences result in having sections better filled out, better sealed — in short, better sellers—the slight additional expense can be well afforded, especially as the fence or cleated separator would last for years.

With regard to merchants and clerks in groceries, where the two kinds of sections have been sold, the plain and old-style, I never heard any complaint on that score, and they have been sold for years.

As to shipping-cases, I think the plain section will in time render it possible to simplify their construction. We know it will take less lumber to make them, and certainly there is right here a saving in pocket to the bee-keeper, for shipping-cases are something one will have to buy every season.

In relation to this same subject, Bro. Leahy, in the *Progressive Bee-keeper*, says:

> I do not like the fence separator—don't believe they are durable enough; too many sharp corners to be getting knocked off; and if you should accidentally get them wet——? There is also danger of bees fastening their cappings to the separator cleats. Now, I said I did not like them; but I may after I try them, and I hope they will be a success, as "no bee-way" sections can be sold cheaper, because they take less material and less work to make them. But I do not think, like some, that honey will look any better in them. They will look too much like something with its ears cut off. Neither do I think that the bees will fill them any evener than they do the old section. Why should they, when the cleat on the separator makes the construction of the separator and section practically the same as heretofore?

As to the glued fence getting wet, of course that is possible; but in all the years that Mr. Miles Morton has used them I do not think he has had any particular trouble on that score; but let it be understood that the right kind of glue should be used; and to get good results, glue must be "cooked" right.

As to the sharp corners being knocked off, that is not so bad in reality as it seems; and as to the other point, whether honey in plain sections looks better than that in old style, I need only refer to the illustration taken from the *Review*.

I believe friends Bingham and Leahy are both open to conviction; and I await with interest the results of their experience the coming season.

In this connection let me say that I desire to have GLEANINGS set forth fairly and honestly the arguments against the fence and plain section as well as those for it; and if some good friend, or some fellow not so good a friend of mine as might be, thinks it has not done it, I wish he would write us a regular scorcher of an article. If he is only honest and fair about it I will publish it. Before any criticism can have much weight it should come from one who has actually tried the thing condemned and found it wanting.

OUR HOMES,

BY A. I. ROOT.

We know that we have passed from death unto life because we love the brethren. —I. JOHN 3:14.

Our older readers are well aware, at least to some extent, of the fact that my Christian life has been made joyous by glimpses every now and then of Scripture texts that shine forth all of a sudden with wonderful new meaning. Sometimes they burst out like a bright meteor; and the more I gaze and consider, the more these texts keep unfolding and developing. A few days ago I was thinking that these bright glimpses had not been so frequent of late. I have enjoyed my daily Bible-readings, it is true, perhaps more than I ever did before. And, by the way, our Bible-reading is in the morning after breakfast, when we are all (or ought to be) at our best. We have been refreshed by abundant sleep — that is, as a rule, and Mrs. Root always gives us a good breakfast. Sometimes I tell her, by way of pleasantry, that such a breakfast, when I am traveling, costs 75 cents — that is, a breakfast that satisfies me to that extent. She often replies, "All right; you can give me the 75 cts. while you think of it." Well, after breakfast I am ready for work. I can go through the factory, take up the hard problems, exhort and reprove, if need be, with much better grace than just before dinner. Now, when our powers are at their best who should have the benefit of them? What is the most important thing in life? Jesus answers, "The kingdom of God and his righteousness." Therefore the best time in the world to read the Bible, and, in fact, the most important thing in any day's duties, we owe to God. Perhaps these Bible-readings and morning devotions fit me to catch hold of the wonderful promises when they happen to come before me during the day. Now for our text.

It was at our Saturday-afternoon prayer-meeting that the lady who presided at the piano repeated these wonderful words: "We know that we have passed from death unto life." In one sense we do not know very much about death. That is the one thing in this whole wide universe that even the Bible fails to tell us much about. We know more about life, and we realize that the two are directly opposite. In a Scriptural sense we very soon decide that the word "death" is figurative. The death of the body we know little about from personal experience. But there is something I may call *spiritual* death that we all learn something of sooner or later. The world is full of dead people—people who move about after a fashion, but, compared with real life, I would say real *Christian* life, their lives are but little more than a living death. Do I speak in enigmas? How about the suicides or the suicide mania, if you choose? These people do not appreciate life. Joyous, buoyant, happy life is nothing to them. They are not only willing to throw it away, but they deliberately *plan* to get rid of it. We need not read the papers, however, to learn about this kind of death. I think I shall not make much of a mistake when I say we *all* know something about it. We become low-spirited and despondent; we have fits of feeling that we do not care for any thing or anybody. If a neighbor jostles us ever so innocently, we feel cross and crabbed about it. If a bright little girl interrupts us with her chatter, we feel cross toward her. Is that true of you, my friends? I really hope it is not. Now, if we let these feelings grow upon us our lives are dead ones, comparatively. What does it all mean? Where do these feelings come from? They come from Satan, the arch fiend, and the enemy of every *sort* of life. His *mission* is death. If he can not persuade us that God did us an injury when he gave us a human life to live, and persuade us to throw it away as the suicide does, then he will try to make us go through life in that living death I have tried to tell you about. I wish I had skill and eloquence enough to picture a *life* such as God intended we should have and enjoy. When you see a schoolboy, after his lessons are well recited and school is out, you get a picture of life — a glimpse of life to buoyant youth. Huber has a sort of workshop in the basement, where he works with electric apparatus after school and during evenings. It is nicely warmed by my steam-pipes, and brilliantly lighted by a fifty-candle-power incandescent globe. When his plans succeed (and they usually do in the end) he bursts out into a joyous singing. Sometimes his older sisters remonstrate, and ask him to "let up" a little. When some problem he has worked at a good while succeeds nicely, and the new machine comes fully up to his expectations, his singing sometimes threatens to almost raise the roof. It makes me think of the birds on a June morning. They raise their voices in thanksgiving and praise clear up to the very highest notch. They sometimes end abruptly, as if their throats were not sufficient to give utterance to the thanksgiving and joy that fill their little hearts. Well, I have sometimes thought the same of Huber, or, if you choose, any other average schoolboy, bubbling over with mirth, merriment, and joyousness, ready for any sort of joke, or ready for any burdensome task to assist mamma. Huber enjoys excellent health, and he is remarkably stout and strong for a boy of fourteen. He enjoys every thing. Sometimes when he is exceedingly interested in his electric work it is hard to get him to come to supper, and you might think he did not care for supper; but when he comes to the table you would probably change your mind. I have given you a sort of glimpse of life—not alone just mere animal life and spirits, for Huber's happiness is based on the rock Christ Jesus. That is the foundation on which it is all built.*

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*You may say that, in the above, I have taken my picture of life from youth. We can not all have youth. True; but we may all have this life, nevertheless. I am fifty-eight years old. Yesterday we had a wedding at our house. The day before the wedding was cold and stormy, and the Weather Bureau predicted a cold wave. It was extremely desirable that the exhaust steam that goes from the factory under my

People often say, "Oh! no wonder *you* are happy. If I were situated as *you* are, *I* could be happy too," etc. Let me suggest right here that such people often mistake cause for effect. The fact that they are happy and joyous and cheerful and good-natured has been excellent capital to start business with. This Christian hope and Christian life give them success in their undertaking. Once more: Helen Keller is an illustration of about as many misfortunes as are ever heaped upon a single person. She was launched into life deaf, dumb, and blind. But there was a beautiful Christian spirit waiting to be unfolded; and, in spite of all those adverse "environments" (as scientists put it), Helen Keller now stands before the world as a living wonder. Her bright, hopeful, joyous life and never-failing stock of good-natured zeal promise to carry her possibly to the highest pinnacle of education and culture. I hardly need to describe her as she has come before the world at the present time. You see and hear of it in all the papers. Another thing, her life has demonstrated, as nothing ever did before, what may be done by untiring, unselfish Christian *teachers*. If I am correct, poor Helen did not even have money to pay for the expensive work of breaking down the apparently insurmountable barriers that cut her off from the great storehouse of intelligence and learning that is around the most of us. If *she* succeeded, as she has, shouldn't we who have sight, hearing, and speech, be *ashamed* of ourselves when we complain of Providence or of our fellow-man?

Why are some people happy in the way I have just described, and why are some so exceedingly unhappy? What makes this vast difference—this great gulf in this world of ours —between *life* and *death?* Why, bless your heart, dearly beloved (I think this is the first time I ever used this expression, but just now it expresses my meaning better than any thing else), our text explains it all, and makes it clear—"because we love the brethren." Despondency, the blues, ill temper, and all these things, come from *selfishness*. The selfish man or woman will sooner or later *find* this living death. Selfishness *ends* in this spiritual death, and spiritual life *begins* with love for others — with love for humanity. If you are miserable, it is because you are selfish. If you are joyous, it is because you love somebody instead of self —"*because* we love the brethren." What a wonderful Scripture text that is, any way! I have often thought that Bible texts were beyond any other form of language the world has ever known, in presenting a great amount of truth in a few words. "We know." Yes, indeed, we *do* know. I know that the gospel of Christ Jesus raises us from death unto life as well as I know that a good colony of bees has a queen. When I commenced bee-keeping there were certain people who used to try to argue me out of that theory. They did not comprehend — in fact, they had not a glimpse of their own *awful* stupidity. The idea of wanting a man to stop and talk with them when he was as familiar with the inside of a hive as a schoolboy is with his thumbed and dog-eared spelling-book! My good friend, do you say that you are a professing Christian, but that religion has *not* brought you peace and joy? Then it is because your religion is a selfish one. You are loving self and hating somebody else. Do you plead that there are peculiar circumstances? The great Master admonished us to love our enemies, and to *do good* to those who hate us. If you are doing this, working at it day by day, you will certainly be happy. You can not escape it. Let us now see some other precious Scripture texts with the illumination that will shine around them after what I have been saying. At the grave of Lazarus he said to Martha, "I am the resurrection;" "He that believeth on me, though he were dead, yet shall he live again;" and, "Whoso liveth and believeth on me shall never die." Now, while you read these words, interpret the word "life" as I have presented it. In another place he said: "I am come that they might have *life*, and that they might have it more abundantly." Is there any one thing in this world that is to be desired more than this "life" I have been describing? I do not mean alone exuberance of spirits, but a bright, kindly, loving life — a life that not only includes activity, but good will and love. Again, he says, "I am the *bread* of life;" and still again, "I am the *living* bread which came down from heaven; if any man eat of this bread he shall live *for ever;*" and all through that sixth chapter of John you will find the words "life" and "living" used in this sense. Once more: "He that eateth of this bread shall live for ever."*

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plant-beds across to the house should be in excellent working order on that wedding day. By some mismanagement too much steam had been sent across to the house, and it had burst out of the ground, filling the tiles with mud, and made general havoc. One of my trusty German helpers volunteered to fix it, if I said so, but it was necessary for me to be out in the storm all day long and supervise the work. Along in the middle of the afternoon it seemed utterly impossible that we could get it completed. My willing helper was covered with a mixture of snow and mud (I was not *quite* so bad), and was doing his best. When it looked as if we should have to give it up—that is, unless Providence intervened—I breathed my little prayer. Shortly after, the long pole we were working with unexpectedly passed through the obstruction. I turned on the steam, and it gradually worked its way through. Before the sun went down the job was completed, steam was heating the circle of pipes under the floor, and going out in the frosty air at the top of the highest chimney. I felt glad because we had succeeded. Then I thought of the many times when that little prayer had availed when every thing else seemed hopeless. Then my heart went up in praise and thanksgiving to the great Father. I thanked him that he had given me a life to live, even though it was one of struggles with difficulties. Yes, I thanked him for the difficulties. I thought of my text, "from death unto life." I remembered vividly a portion of my life when I was sinking into spiritual darkness, for *I* have had a glimpse of "death," but through Christ it has all been changed to "life;" I could have shouted for joy as Huber does; and had I been off alone where none but the great Father above would see or hear, I believe I should have done so. Yes, you can be joyous, even if you *are* old. Some of the happiest and most precious experiences of my life have been since nearing sixty years of age. My labors during the stormy wintry day were not for self, but for the loved ones in our home. At the marriage-service, the minister alluded to the fact that Jesus himself once attended a wedding, and assisted in the festivities.

*Jesus came from heaven to earth on purpose to

I suppose this beautiful text was intended to describe the life of a new convert. When I first stood up in public and accepted Christ before men my heart was so full of love to everybody, friends and enemies, that it seemed overflowing. As I passed out of the church I remember vividly how I loved the horses that stood hitched to the posts, waiting patiently for the meeting to be out. Why, I am afraid you will laugh at me when I tell you I felt like putting my arms around the necks of these faithful servants of mankind, and hugging them, and crying for joy—yes, *joy* and *thanksgiving* to God for having given us the *horses* with all the rest of his teeming universe, for our comfort, joy, and life.

I had in mind quoting some words about death ; but I almost wish I might skip them. We will try a few, however. "The wages of sin is death." Now define the word *death* in the above in the way I have tried to describe it. It is not alone the fact that a man who deliberately and willfully sins shall be finally put to death, but he shall go through years of living death. It is quite the fashion of late for men steeped in crime to "hold up" people. These men are dead—*awfully* dead, you might say—to every good impulse — to every *living* impulse, if you choose. All sense of justice and right is gone. Some time ago I told you about a fellow who knocked down a schoolteacher to rob her of her honest earnings. A refined and cultured lady was knocked down by this living brute—oh, no! I mean *dead* brute—that he might appropriate for his own great beastly self *her* honest wages. What do you think of such a kind of life as his must be?

Let us now examine the latter part of our text. "He that loveth not his brother abideth in death." The brutal fellow who robbed the schoolteacher did not love anybody — not even a beautiful and lovable woman who had never harmed him by word or thought, but who, on the contrary, was doing her utmost to prevent happy innocent boys from reaching a living death like unto his own. O dear friends! can you not join us in the work of leading humanity from death to life? The work must be done largely with the children. Correct habits and ways of thinking must be instilled into their little minds. A letter from an old friend has just been put into my hands. As it pictures vividly the transition from death to life, I want to give it right here:

> *Friend Root:*—Over ten years ago I was requested to take a class of boys in our Sabbath-school. I refused because I felt my inability so much, and they had already had several teachers who had given up, because they could not manage them. But when the next Sabbath came, and they had *no* teacher, the thought came to me, "With God all things are possible;" and with a prayer for help, I went to the superintendent and told him I was ready to take the class. I need not tell you I met with trials and difficulties. Many times I thought I should have to give up; but the more discouraged I got, the harder I prayed; and, no matter what the boys did, I never allowed an impatient word to pass my lips or a frown to pass over my face. Many times I had to omit the lesson almost entirely while I told them the story of the cross and how much Jesus had done for us; and I tried to impress on their young minds that we ought to do something for him.
>
> Now for the sequel to my rather long story. The second day of this month I had the unspeakable joy of seeing two of my most ill-behaved boys baptized and united with the church; and another one will soon follow. For some time I had seen a change in my dear class; but it seemed as if it were too good to be true. I thought my cup of joy was too full when my own dear boy gave his heart to the Lord. But I never experienced the care and anxiety for him that I have had for my class; and I can say with deep joy, "Praise the Lord, for he has heard my prayer."
>
> If you have any discouraged teachers in your Sunday-school, tell them for me to hold fast to the arm of the Lord. Keep on praying. Be gentle, tender, and loving to the little ones under their charge. Let them know their teacher loves them and takes an interest in them, and in due time they will receive their reward if they faint not. MRS. J. REID.
>
> Douglas, Mich., Jan. 18.

NOTES OF TRAVEL

BY A. I. ROOT.

Feb. 7.—It is now 4 o'clock in the afternoon of a beautiful sunshiny day. I have just been over to the greenhouse to bid good by to the potato-plants. You know that one that is to make such a record—that is, if it does make a record, and I think it will, for the plants are already a foot high, with wonderfully strong foliage, and potatoes already about the size of walnuts. We have commenced laying down the tops of some of them, and are gratified to find buds starting out at the joints. And, by the way, a potato-plant grown under glass, where the flea-beetle and all other insect enemies are kept entirely away from it, is a very pretty sight. The Earliest and Darling strawberries in that sub-irrigated bed through the apiary are already in full bloom, and we are waiting for a day mild enough for the bees to fly to fertilize the blossoms. Under the genial influence of the sun, that is getting higher and higher every day, all of our stuff under glass is beginning to spring into life. Well, little plants, good-by for three weeks. I hope the boys will give you the same loving care they have had while I watched your growth day by day. And now for that wonderful land I have read and thought about almost since childhood, the Bermuda Islands, away off in the Atlantic Ocean.

Feb. 8, 11 o'clock A. M.—The Hudson River, at this season of the year, is really a great study. Not only hundreds but *thousands* of people (with horses and horse-tools to match) are at work at the ice industry ; and the immense storehouses that line the river for miles and miles make one almost wonder if the world is big enough to use all they will contain. The greater part of them, I see, are inscribed, "Consolidated Ice Co., No. ——," from which I infer some great syndicate controls the output. I am told the snow has

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bring mankind from death unto life; and yet they rejected his proffered aid, even though he attested his divine commission by the most startling miracles. Once in his earthly mission we are told that "Jesus wept." Yes, the Son of God actually shed tears of grief because men chose death rather than life. They not only rejected the life that he offered so freely, but they hated him, and finally crucified him. May we not also weep when we recognize that mankind still, in this day and age, choose death rather than eternal life?

troubled them more this winter than usual; that they have, with much labor, moved it off again and again, and still the ice, a foot or more thick, contains many snowy streaks. It seems they now "stake out claims," as it were, by sticking in the ice rows of bushes or branches of trees. The man who gets his bush fence around a certain tract first, holds the ground (or water) from new comers. I judge they have had very low temperatures, from the great masses of ice on the rocks, where a spring run has come out and frozen. These "baby glaciers" make the rocky scenery look very pretty along the route.

Besides the ice-cutting, the fleets of ice-boats are very interesting; and then the fishing through the ice, and occasional wheel-rides, all in all make the river look like "life." From the number of craft of all sorts and sizes frozen in, I gather that the Hudson must teem with life in summer also, as well as in winter.

The glimpses of the Catskill Mountains are very fine; but the day is almost too misty for mountain views. As we near the city of New York the temperature seems to moderate, and snow and ice are giving way.

Feb. 9, on board steamer Trinidad.—When in San Jacinto, Cal., Mrs. Root and I never tired looking at the summit of the San Jacinto Mountain, the majestic peak pushed out away up among and through the clouds. Well, here in New York city, it's lofty *buildings*, made by man, that pierce the very clouds themselves, and reach away *above* them. Actual fact—"honest troot" (as Huber said), from your friend A. I. Root; and when he got up in the morning, and gazed abroad, he had not been in any saloon either. He stayed over night at the Grand Union Hotel; went to bed before 9, and was up before 5 in the morning. I have read of London fogs, but I did not know before that they had fogs in New York. Oh! but they do. You see, the buildings went up (yes, 28 and *30 storied*), and the clouds came *down*. May be it was in honor of their old friend and admirer. If so, he enjoyed it to the full; and I gazed again and again, and said, "Why, is it really *possible*, and not an illusion, that buildings are actually away up in those dizzy regions of the air? There are "Roots" in the great city as well as back in Ohio. Yes, my companion says that, in some places, "the woods are full of them." Well, Mr. E. N. Root, publisher of the *American Grocer*, told me that these "sky-scrapers" are all built first of steel, with floors of tile, and then covered externally with stone. The steel gives strength, durability, and safety from fire; and here in New York they have "the everlasting rock" for a foundation, so nobody can tell how high they may go yet. With electric elevators it is quite pleasant to live above the fogs (clouds), dust, and noise (and, I hope, *wickedness*) down below. When my neck ached looking up we went into an old church and rested in the very same pew where George Washington used to sit with his family. I am glad this old church has been spared with its ancient cemetery; and I am glad, too, that the "father of his country" left such an example. My dear friend, when *you* are dead and gone will your children be able to find the pew where you and your household sat regularly every sabbath and listened to gospel teaching?

I have been looking over this great boat as a young bee may be expected to look over the hive when it first goes out for a playspell. I have been most agreeably impressed with the pleasant and courteous manner of all on board, sailors and all. After an "elevated" car conductor snaps at you as if he meant, "Why, a man reared in a cow-stable might know better than to ask a 'fool question' like that," you feel glad when an officer of the boat says, "Oh, yes! go anywhere on the boat, and make yourself perfectly at home."

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

The Ohio Experiment Station sends us the following in the shape of a newspaper bulletin:

WARNING AGAINST FRAUDS.

A letter just received at the Ohio Agricultural Experiment Station from Miami County states that a man giving the name of Oliver Hawn, and claiming to have been at one time connected with said Station, is traveling through that county and selling material for spraying fruits, foods for poultry, and spray stuff for lice-killing purposes, and claiming that his materials have been experimented with at the Station, and proved successful.

Another communication, from Stark County, states that a man giving the name of Essig is trying to sell in that county a recipe for the prevention of pear blight, which he claims to be indorsed by this Station. This party is said to show letters written on the letter-heads of the Station, but without signature, and claims that the State, through the Station, has presented him with a fine gold watch.

These men are both frauds. The Ohio Agricultural Experiment Station does not indorse or recommend secret compounds or processes of any description whatever; and prosecuting attorneys throughout the State are urged to arrest and prosecute, for obtaining money under false pretenses, any person who may claim to have any such indorsement from the Station.

Please notice that the bulletin says:

The Ohio Agricultural Experiment Station does not indorse or recommend secret compounds or processes of any description whatever.

The newspaper men and others who are defending the practice of selling recipes, etc., would do well to keep the above in mind.

IS SWEET CLOVER A NOXIOUS WEED?

Below is the decision of the Ohio Experiment Station, sent out in the form of a newspaper bulletin:

HOW SHALL WE RANK SWEET CLOVER (MELILOTUS)?

Many portions of Ohio have the roadsides and other sodden or "out of tilth" lands occupied by the white sweet-clover plant (*Melilotus alba, L.*). Since it has been regarded as a noxious weed the former Ohio Statute placed it in the same list of proscribed plants with Canada thistle, common thistle, oxeye daisy, wild parsnip, wild carrot, teasel, burdock, and cockle-burs.

Under the operation of this statute, private lands might be entered upon to destroy the melilotus growing for any purpose, as for bee-pastures. The destruction of bee-pastures in this manner actually occurred near Delaware.

Rightly, then, it may be asked, "How shall we rank sweet clover?" To answer this we must consider where sweet clover grows and what is its character.

Sweet clover grows spontaneously along tramped roadsides, even to the wheel-ruts in abandoned roadways, and in tramped or sodden land anywhere. When found in meadow lands it appears not to occur except when the ground has been tramped by stock when wet. It grows by preference in old brick-yards. It may be grown in fields by proper tillage.

The character of sweet clover may be now determined. Viewing it in no other light we thus see that sweet clover grows luxuriantly in places where few or no other plants flourish. But it belongs to the great class of leguminous plants, which are capable, by the aid of other organisms, of fixing atmospheric nitrogen and storing it in the plant-tissues. It belongs with the clovers, and it may thus be used to improve the land upon which it grows, and this appears to be its mission. It occupies lands that have become unfitted for good growth of other forage-plants. Its rank, then, is as a useful plant, capable of increasing fertility of land.

How shall sweet clover be treated?

The character determined, the treatment to be accorded this clover-plant is really settled. The plant is the farmer's friend, to be utilized and not to be outlawed. The plant grows and spreads rapidly. So do red clover, white clover, timothy, blue grass, and other forage-plants; but sweet clover grows where they do not; it indicates lack of condition for the others. Viewed in this way it is to be treated as preparing unfitted lands for other crops.

It may be mown a short time before coming into bloom, and cured for hay. Stock will thrive upon it if confined to it until accustomed to it. The roadsides, if taken when free from dust, may be made almost as profitable as any other area in clover by cutting the sweet clover and curing for hay. If this is regularly attended to while stock is kept from other lands that it invades, sweet clover will be found doing always the good work for which it is adapted.

THE THOROUGHBRED POTATO AND SOMETHING ABOUT VARIETIES IN GENERAL.

Mr. A. I. Root:—Sometimes reports of failures may be as useful as reports of unusual success; but they are not so common. I notice you put the price of Thoroughbred potatoes down to the price of others, and assign as a reason that they are so well introduced. Perhaps there is another reason. Judging from my experience with the Thoroughbred this year, they are the most thoroughbred humbug that I have ever tried in the line of potatoes. I planted my patch with Burpee's Early, Beauty of Hebron, and the Thoroughbred, all the same day. They had the same treatment, except that I hoed the Thoroughbreds a little when small, to be sure no weeds hindered their growth. Of the Burpees and Beauty of Hebrons I did not lose a hill, and the crop was a fair one, at least for this year; but the Thoroughbred made slow growth; and when a bug touched a hill the potato gave right up and almost quit trying to grow. Then when I destroyed the bugs and kept them off, the hot sun or something else seemed to kill the tops, so when the potatoes were no bigger than hickorynuts half the hills were dead, and only a few hills survived until digging-time, and the best of them did not yield as well as the Beauty of Hebron. I concluded that, when Terry first tried them with such good results, all conditions must have been very favorable. I expect to try them again, but have little faith in them. My seed was from your stock.

C. M. WHITNEY.

Rootstown, Ohio, Dec. 24, 1897.

Friend W., I am greatly astonished to hear such a report of the Thoroughbred. It is true, it has not done equally well in all localities. In fact, there is no potato I know of, unless it is the Rural New-Yorker, that seems to succeed everywhere. I have noticed and promptly reported that the bugs troubled the Thoroughbreds, seemingly, more than any other potato. But so far as the other points you make are concerned, I have never seen or heard any thing of the kind. On our ground they are not nearly of as good shape as some other potatoes; but those we bought of Maule, and the crop raised for me in Michigan, were the smoothest and finest-shaped potatoes I ever saw. I do not know that we ever had any complaint before of a poor yield compared with other potatoes. Try them again, by all means. I am inclined to think you will have a different result. I have noticed this frequently, that the result one year with a certain potato may not agree at all with that of the very next season. In regard to novelties, I am beginning to learn that we must go slow about condemning. Since I published the article on page 63, in regard to novelties among small fruits, I have had reports in favor of almost every thing friend Chinn mentioned, unless it is the Mayberry. Nobody succeeds with this, that I know of. In Gregory's new catalog I notice he says the Rocky Mountain cherry from some plants is unfit to eat, while from others it is very good. We have three bearing bushes, and the cherries are all the most disagreeable-tasting fruit I ever got hold of. But some samples that looked very much like them, sent in from the far West as "sand cherries," were very fair eating.

THE OREGON EVERGREEN BLACKBERRY.

Friend A. I. Root:—I want to say to R. Chinn, Jan. 15th GLEANINGS, relative to the Oregon Evergreen blackberry, that, if they are properly cared for, and the climate does not kill the plants, they are a very fine and delicious fruit when ripe, and are wonderful to bear, and will continue for a period of two months with ripe and green fruit and blossoms all the time. The price he paid was outlandish. If any of the readers of GLEANINGS want any plants I can furnish them for 25 cts. each, or three for 50 cts., postage prepaid. I send you by mail a few roots to plant. Put them in a low piece of ground where the water will not stand on them. Give them plenty of mulching—old straw, chips, etc., and lots of water while fruiting, and I think you will find them very fine, large, and sweet. We have had clusters, or bunches, that I think I am safe in saying yielded from eight to ten bushels of fine rich berries.

R. R. RYAN.

Salem, Ore., Jan. 26.

We will take care of the roots, and plant them out as you suggest, friend R. My impression is that they do not usually do as well here in the East as they do with you. Your point is a good one — plenty of water. In fact, all blackberries must have plenty of water to produce luscious fruit Now, Oregon is the place where it not only rains every day (as somebody has said), but some days it rains *twice*. Very likely the reason why this berry failed in the East is because it lacks its accustomed supply of water; and, by the way, how will it work with blackberries in general to put them on low ground thoroughly underdrained, so no water can stand, and then give them such a mulching as described? That would be a good deal after the plan that T. B. Terry follows. He mulches with straw, and puts it on so heavily as to keep down all weeds, and at the same time hold the moisture for a long time if no rain comes.

GOOD FOR THE WINEBERRY.

Mr. Root:—Having read Mr. R. Chinn's account in GLEANINGS, p. 63, about his wineberries doing so poorly, I thought it right to tell about mine. In the spring of 1896 I bought 12 plants, and in the spring of 1897 3 of them were strong enough to bear, and gave me 6 qts. of very fine large berries, as large as the black cap raspberry, with very fine flavor. At the present time the stalks are in a very healthy state, and stand 4 or 5 ft. high after being trimmed, and some of the stems are an inch thick. I should not be surprised if I should get 5 or 6 bushels this year. They come up to the description in the catalogs in every respect;

and as for hardiness, we have had from 8 to 11 inches of ice, and the stalks are perfectly healthy to the very tips. I am delighted with them. OLIVER NEIZEL.

Reading, Pa., Jan. 26.

THE EVERGREEN BLACKBERRY, ETC.

I have grown the Oregon Evergreen blackberry for a good many years, and I should not like to do without them. Our native blackberry is the same as the Dewberry of York State, and is a better berry than the Evergreen; but here is the trouble with the native—they are at their best while I am busy with the hay crop, so I do not get many to can. The Evergreen comes in later, so I have enough and some to sell each year, as they bear well each year. For preserves I prefer the Evergreen. With me they are a hardy, rank grower. I have a frame extending 14 ft. each way from the plant, north and south, and clip the vine at that length, and train three or four vines on each frame. Vines of 1897 give me fruit in 1898, and are cut away in the fall, and the frame is ready for 1899. I have been giving away sets to any who came for them. I shall have a number this spring. I have 58 qts. of fruit left yet (all for a bachelor).

I have kept bees for 16 years. My largest yield was 150 lbs. comb honey, Mother Cotton hive and native blacks Italianized. I increased to 40; results, lots of swarms and little honey. I bought sulphur last fall and killed down to 8.

The weather is like spring. Striped fence-squirrels are out. Grouse are feeding on the ground. Snails are crawling outdoors; snow gone.

Goble, Ore., Jan. 31. G. W. MAKINSTER.

THE AMERICAN COFFEE-BERRY; HOW IT ANSWERS FOR COFFEE, ETC.

I planted three ten-cent packages of the American coffee-berry last spring. The ground was cold and wet, so the planting was not done until the first of June. It kept so cold and wet that only about two-thirds of the beans came up. The crop matured early in September, before we had any killing frost. When all was gathered I had just half a peck of shelled beans—color a light cream. The pods grow very thick on the main stem and on branches, but do not branch very much. They bear pods very close to the ground, and set generally two beans in a pod, sometimes three. I counted one stalk that had 214 pods, and another 225. Thus far I am satisfied that they are prolific, and would mature in this climate.

Would people generally like them for coffee, and would they sell for a drink? I first browned and ground enough to make three pots of coffee, using one drawing for two meals. At the end of that time, for a week I missed that drink, when I sat down to a meal, more than I ever did any tea or coffee before in my life. I consider it as pleasant and agreeable a drink as any thing I ever tried, and prefer it to any real coffee. But how would others like it, whose interest extended only as far as taste and cost are concerned? I was anxious to find out, so I gave a small drawing, ready ground, to five different families. In the five families, about 25 persons drank of it. All but two said it was a pleasant and agreeable drink; those two did not like the taste of it, but they admitted they were cranks about their coffee, as they bought only the best.

Brooklyn, Ohio. X.

The above is a very fair report, and we should be glad to hear from some of the other readers of GLEANINGS in regard to it. The coffee-berry, you will notice, is very much earlier than any of the larger varieties of the soja beans. The strain of seed we are sending out now will, I think, produce two crops in a season here in Ohio. It will grow on the poorest kind of ground, and will assuredly be worth as much as any of the clovers for plowing under. Its value for seed for stock has not yet been determined; but the beans themselves are so exceedingly rich in nitrogen, I am sure it must prove valuable for many purposes. It is a common expression that certain kinds of soil are "too poor to grow white beans;" but I believe this coffee-berry, and probably other varieties of the soja bean, would grow with considerable luxuriance where even the proverbial white bean would fail to make a stand. Who knows but this new coffee-berry that is now quite extensively introduced has not been the means of bringing down the price of real coffee? If it should take the place of real coffee largely, a still better result would be attained.

TOP ONION-SETS.

Some time last spring—I think it was in May—a man brought me a bushel of onions, firm and hard, without a sprout visible in the whole bushel, at a time when old onions were all so sprouted as to be comparatively worthless. He wanted a dollar for the bushel. I took them at once, and then asked him to tell me how he managed to keep them thus late without any sprouting, and whether he sorted out the sprouted ones before he brought them.

"Why, I did not sort them at all, and I did not manage at all. I just keep them where they won't freeze. These onions never sprout, that I know of. I have had them a good many years, and they keep just this way."

"But, my good friend, where did you get the seed? what is the name of it?"

"Didn't have any seed. These onions grow from sets—don't know any name but 'onions.' I brought you several bushels one spring, and you wouldn't have them because you said you did not know what they were."

Now I will tell you what I did. I just planted every onion in that bushel; and although the ground was poor, and the weather was not favorable, they gave us about two bushels of nice firm hard onion-sets that have not at this date, Feb. 4, showed any signs of sprouting or becoming soft. In fact, I feel just as if I should like to go into the business of growing this kind of onion and onion-sets. Perhaps they would not yield as large as some of the kinds that grow from black seed; but I tell you it is worth something to me to have onions that will keep, and onion *sets* that will keep.

By the way, about fifty years ago my mother and I made quite a little money by growing top onion-sets; and, as nearly as I can remember, they looked like these. There never was any trouble in keeping them at all, and we could sell any amount of them at a good price at any grocery. It is just a yellow, rather flat onion that always grows from top sets. A great many of the sets are no larger than peas, so that a bushel would make a tremendous lot of onions. I have looked over the seed catalogs, but I do not see any thing mentioned that fully describes this onion. Our readers will remember that we disseminated a quantity of *white*-top onion-sets three or four years ago. Did anybody ever succeed with them? We have been planting these onions and onion-sets almost ever since, but for some reason or other we never succeed in getting any nice onions, or nice sets either, of any account; but this top onion I have now, judging from one season's experience, and from the way in which the large onions looked when I bought them, will, I think, prove to be a good thing. Who will tell me more about it?

THE UNITED STATES WEATHER BUREAU AND HICKS.

Since what was said on page 26, one person has ordered his journal stopped, saying that "Hicks is more accurate than the Weather Bureau." I wonder if I can not make this matter a little plainer. Just before the cold wave (of zero weather for three nights in succession), we had a week of weather almost without frost, and that right in the month of January. The Weather Bureau gave prompt and correct notice two days ahead, right along. Just before the severe cold spell the following warning appeared in all the papers:

> Shippers of perishable goods should take notice of the approaching cold in making shipments in any direction during the next day or two.

Now, who can compute the saving that shippers all over the United States have made by stopping potatoes and other perishable produce in accordance with this two days' notice? On the night of Feb. 2d and morning of the 3d, the mercury went down to 10 below zero.

Once more: A few days ago the following telegram came to our office from the Weather Bureau:

> *Jan. 28, 10 o'clock.*—Threatening weather and light snow to-night; fair Saturday; warmer Saturday morning; colder by night.

Please notice the complexity of this prediction. Well, the above was exactly according to prediction. They hit it on temperature, both up and down, about as well as an observer could have described the weather *afterward*. Now, then, how about Hicks, who, as our subscriber claims, has been more accurate than the Weather Bureau? Did Hicks ever notify the nation of a cold wave so it could stop shipments, etc.? Did he ever say, in effect, "In the middle of January there will be a long warm spell; in some localities a week or more when it will not even freeze nights (in the Northern States) but on the 1st, 2d, and 3d of February the weather will be near zero most of the time"? Now, do not be in a hurry, friends. I am very well aware that Hicks often says, "Look out for something very unusual about this time;" but he does not say what the "unusual" will be; therefore his readers can interpret it as an unseasonable and warm spell or the opposite, or it may be a terrific windstorm, or a great depth of snow or a flood. Any of these would fill the bill about the great things that he predicts will happen about such a time. Still worse, and the saddest and most disgraceful part of the whole affair, is that he claims he gets his information from that old heathen institution known as *astrology*, and actually gives pictures of the planets, and poses before the people who will listen to his hypocrisy as a scientific man and astronomer; and this man claims at the same time to be a *Christian!* Of course, his statements in regard to the positions of the planets, etc., are true. This information he probably gets from accurate scientific sources; but from this he rehearses the same rigmarole that the gipsy fortune-tellers do—that the "conjunction of certain planets" will be favorable to "marrying a rich man," or something of that sort, except that Hicks applies it to the *weather* instead of a silly girl's fortune. If the positions of the planets influenced the weather, our United States Weather Bureau would certainly have published the fact years ago. Their careful scientific records show constantly that even the moon itself—our nearest planet—has no effect on the change of the weather whatever, although, of course, the moon does produce the tides. It does not need very much intelligence to sift out *sense* from *nonsense*, or, from what is worse still, hypocrisy and *fraud*.

ELECTRIC BELTS, ETC.

The following newspaper clipping was mailed to us by one of our subscribers:

> Here's a pointer from an exchange in case the electric-belt fakir visits you. An examination was made of some electric belts sold by a street fakir. It was found that, beneath a strip of gauze, was a layer of dry mustard. When the wearer perspires a little the mustard becomes moistened and causes a burning sensation, and the deluded victim believes a current of electricity is passing through him. The mustard probably is just as good; but when one buys mustard he ought to know it.

Well, this thing is certainly ahead of the Electropoise, for there is some sense—or, if you choose, *sensation*—attached to it. While speaking of electric belts it is gratifying to see that the thing is *almost* played out, any way. We notice advertisements reading something like this: "Just think of it! A $25 electric belt for only $3.98." No doubt the same kind of belt has been sold for $25. My own brother paid an enormous price for one as much as 40 years ago. After he had worn it a while he was Yankee enough to pull it to pieces, and it was not even as good as the mustard plaster so far as any benefit was concerned. It was made of alternate links of zinc and copper covered with silk; and where they are made in quantity, in a factory, one might get rich by putting up the whole thing for 25 cents. In the first place, the thing used according to directions does not generate electricity—at least, not enough to be felt. Secondly, if it did, no physician would think of recommending it for every ailment, as the venders do. Thirdly, even if a $25 belt is sold for $3.98, there is even then $3.50 profit in the transaction. Any one of good judgment should be able to satisfy himself of *all* the above points by pulling one of the things to pieces.

THE GRANDCHILDREN AND THEIR WHEELS.

You see, we had an order for a carload of crates for crating juvenile bicycles; and it seemed no more than fair, after having got an order for a whole carload, to take some of their goods in return. So we purchased a small-sized bicycle for each of the grandchildren, Howard and Leland. Now, these wheels are no toy. They are built just as well as big ones. Of course, the boys could not do very much with them in the winter time; but when a warm sunshiny day came, then there was fun out on the stone flagging in front of our residences and the factory. The flagging is four feet wide, and as the boys (aged respectively six and almost seven) "wabbled" considerably; the only way they could keep on the pavement was to have their respective papas run behind them and guide their erring —not footsteps—but wabbles. Once in a while when it was going down hill they would go a rod or two *without* any gentle touch to keep them on the path. Sometimes one of them would run off the walk and tumble in the grass along at either side, and then there would be shouts of laughter. The boys laughed, their papas laughed, and grandpa, who was looking on, perhaps laughed loudest of all. And I gathered a moral right there. These boys need a father's touch once in a while to keep them in bounds. If that touch is given with love and care as they progress, it is needed less and less frequently; and by and by they will go alone, even if papa is not around. Yes, they will not only go alone, but they will help others and teach others to keep in the straight and narrow path, swerving neither to the right nor to the left, and avoiding the pitfalls on either hand. May God bless the juveniles, and also the papas who are administering the gentle touch of the guiding hand that is needed a great many times before they are able to go alone. Even if their papas do get out of breath, may they have grace not to be weary in well doing; and may the grandpapas also have grace to give a little help and encouragement out of the larger and longer experience that they have gathered through life; and may they always go along lovingly together.

A friend sends the following clipping taken from some newspaper:

> A genius of ill omen has invented a machine that will make 400 cigarettes in a minute. It is suggested that he should next invent a machine that will make two coffins per minute, as 200 cigarettes are sufficient to kill an able-bodied boy.

Special Notices by A. I. Root.

POTATOES AS PREMIUMS.

Quite a few are making inquiries in regard to potatoes as premiums for subscriptions. While it is bad for you, friends, it is a little lucky for us that potatoes are worth too much, at least at present, to be given away, especially where we make a subscriber a present of a whole barrel of potatoes as we did in the spring of 1896 and '97. We will, however, do this much: Any person who sends us $1.00 for Gleanings one year, without asking for any other premium, may have 25 cents' worth of potatoes according to the list in last issue. But let us have it distinctly understood that, if wanted by mail, you must pay all postage, at the rate of 10 cents per pound, for postage and packing. If you can order them sent by express or freight with other goods, all right; but we can not very well give postage-stamps away. The margin of profit on them is very narrow. "See?"

BURPEE'S FORDHOOK FANCY TOMATO.

About a year ago Mr. E. C. Green, formerly of the Ohio Experiment Station, sent me some tomato seeds to be planted in the greenhouse. He said it was the result of some of his experiments in making crosses. As soon as the plants were up they showed by their foliage that they were different from any other tomato. For the use of our greenhouse he gave us about half a dozen plants. They are not only remarkable-looking, but the plant is almost as handsome as some of the ornamental foliage plants. In fact, it will be a very pretty thing for a flower-garden or a lawn. The bright green is very marked, and the foliage is so unlike a tomato that, when I saw a row of them trained to a single stem at friend Green's home, I actually did not know what he had till he told me they were the *new* tomatoes. Here is what Burpee says in regard to it in his 1898 catalog:

> The fruit is of large size, very solid, with but few seeds, of a rich ruby-red color and delicious flavor. The handsome, smooth fruits are borne in clusters of three and four, AT EVERY OTHER JOINT; and, as the joints are close together, the plant presents a very crowded appearance. Small plants pruned to a single stem only, two and a half feet high, have produced four to five pounds of fruit. The plant resembles that of a potato—in fact, it might be called The Potato-leaf Bush Tomato. It is so compact and erect in growth that no stakes are required. Even the side branches grow upright, and hence more plants can be set to a given area than of any other variety, making it easily the MOST PRODUCTIVE GOOD TOMATO IN CULTIVATION. The Fordhook Fancy will become immensely popular, both in the home garden and for shipping to market. The large, solid fruits are always smooth and handsome, while the skin is not easily broken. In fine quality, compact, bushy growth, and immense productiveness, it far surpasses the Dwarf Champion and Dwarf Aristocrat, and will prove valuable also for forcing.

I may remark, by the way, that friend Green has sold all his right and title to Burpee. While we have not tested the plant enough to fully indorse all Burpee claims, I think it will pay our readers to give the new tomato a trial, as an ornamental plant if nothing more, and we therefore make the following announcement:

Any one who pays for Gleanings in advance, or who has already paid up in advance, may have a packet of ten seeds of the new tomato for the asking. They are not for sale at any price this year, as we do not want to conflict with friend Burpee. We simply give them to our subscribers.

SPECIAL NOTICES BY BUSINESS MANAGER

THICK-TOP FRAMES.

We have at Taylor, Texas, 500 thick-top frames, sent there by mistake. Including the freight there these would be worth $9.00. We offer them f. o. b. at Taylor for $8.00.

"FACTS ABOUT BEES."

New edition of Mr. Danzenbaker's booklet, "Facts about Bees," has just come from the press, and will be sent free from this office to all who apply with 2 cts. to pay postage. This booklet embodies all of Mr. D.'s latest ideas, including the Danzy section, double cleated separators, etc. The little work as a whole has more of real value in it than many of the high-priced books.

MAPLE SUGAR AND SYRUP.

We have already received a small lot of new sugar, and within a week shall probably have plenty of sugar and syrup. We have on hand now about 30 gallons choice '97 syrup at 85c per gal., or in 10-gal. lots at 80c; also some '97 maple sugar, No. 2 grade, at 6c per lb.; No. 3 grade 5c per lb. We can probably furnish new syrup, first run, at 90c per gal.; 10-gal. lots at 85c; new sugar at 9, 8, and 7c respectively, for first, second, and third grades; ½c per lb. less in 50-lb. lots; 1c less in barrel lots of about 200 lbs.

BUSINESS AT THIS DATE.

We have increased our working time, and are shipping three to four full carloads a week besides the numerous small orders; yet we are losing ground, and shall be compelled very soon to put on a double turn of men, and run night and day. We have orders booked, not yet shipped, for nine carloads of goods for export besides seven carloads for different points in this country. We are filling less than carload orders with reasonable promptness, and carload orders as fast as we can get them out. So early in the season a little delay is not so serious as it will be later. We hope before the end of March to be closer up on orders, ready to move the goods off promptly.

BURPEE'S FARM ANNUAL FOR 1898

The Leading American Seed Catalogue.

THE BEST SEEDS THAT GROW, at lowest prices.

TWENTY-ONE GRAND, NEW NOVELTIES for 1898, which cannot be had elsewhere.

This handsome new book of 144 pages is **mailed free** to planters everywhere. **Write to-day.**

W. ATLEE BURPEE & CO., Philadelphia.

When writing to advertisers please mention GLEANINGS.

Ours is the Most Complete Department Nursery in the U. S.

Can supply all your wants from **Flower and Vegetable Seeds to Street Trees** at low rates. We publish one of the leading Seed, Plant and Tree Catalogues issued, which will be mailed **free.** Send for it now, it will save you money. Try us, can refer you to customers in every state and territory in the Union. 43 years of square dealing has made us patrons and friends far and near. Have hundreds of carloads of

FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS.

We send by mail postpaid, Seeds, Bulbs, Plants, Roses, Small Trees, Etc. Safe arrival and satisfaction guaranteed; larger by express or freight. 44th year. 32 greenhouses. 1,000 acres.

THE STORRS & HARRISON CO., Box 152 Painesville, O.

When writing advertisers please mention GLEANINGS.

REID'S TREES

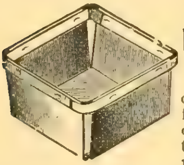
ARE RELIABLE.

Everything grown in Reid's Nurseries is healthy, well-rooted and true to name. Every effort is made to save expense to customers. We sell direct and ship direct, saving fifty per cent. on Trees, Shrubs, Vines. Write for catalogue, estimates or suggestions. Try **Star Strawberry, Eldorado Blackberry.** **REID'S NURSERIES, Bridgeport, Ohio.**

When writing to advertisers please mention GLEANINGS.

Fruit Packages of All Kinds,

Also

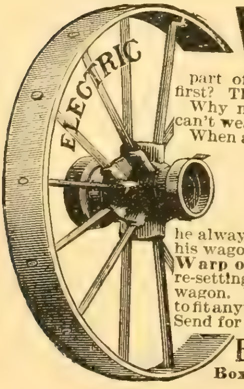


Bee-keepers' Supplies.

We allow a **Liberal discount** on early orders. Why not send for your supplies now to save the discount and avoid the rush of the busy season? Catalogue and price list free. Address

BERLIN FRUIT-BOX CO.,
Berlin Heights, Erie Co,, Ohio.

In writing, mention Gleanings.



WHAT

part of a wagon wears out first? The wheels, of course. Why not buy wheels that can't wear out? When a man buys the

ELECTRIC WHEELS

he always has good wheels on his wagon. **They can't Rot, Warp or become Loose;** no re-setting of tires; they fit any wagon. We also make wheels to fit anything wearing wheels Send for circulars and prices.

Electric Wheel Co.
Box 95 Quincy, Ills.

In writing, mention Gleanings.

GET YOUR **TOMATO-SEED, At Least,**

— FROM —

Livingston, the Famous Tomato Specialist.

Superb catalog (96 pp.) free, if you send 10c for a packet of our latest **NEW TOMATO, "HONOR BRIGHT."**

A. W. Livingston's Sons, Columbus, Ohio.

In writing advertisers, mention GLEANINGS.

CHOICE.....STRAWBERRIES
FRESH DUG PLANTS.

NICK OHMER, MARGARET, SEAFORD, RUBY, CARRIE, ETC. 400,000 Clyde, 130,000 Glen Mary, 400,000 Marshall Write for estimate on large lots. 100 varieties. CATALOGUE SENT FREE.

C. N. FLANSBURGH, LESLIE, MICHIGAN.

In writing, mention GLEANINGS

A Palm Cheap!

Palms are considered the rich man's plant, but for only 25c we will send postpaid to any address a fine little plant from two-inch pot, and a copy of our new spring catalog of trees and plants.

Established 1869. Over 150 acres. Address

The Geo. A. Sweet Nur. Co.,
Box 1837, Dansville, N. Y.

In writing, mention GLEANINGS.

1,000 PEACH TREES one year from bud, two to three feet, mostly branched, with freight prepaid to any station east of Mississippi river. for $19.00: or 500 for $11.00. Sample prepaid, 25c. Other sized trees proportional prices. R. S. JOHNSTON, Box No. 43, Stockley, Del.

In writing, mention Gleanings.

High Arm

Warranted Ten Years

TRY IT FREE

for 30 days in your own home and save $10 to $25. **No money in advance.**
$60 kenwood Machine for $23.00
$50 Arlington Machine for $19.50
Singers (Made by us) **$8, $11.50, $15**
and 27 other styles. **All attachments FREE**
We pay freight. Buy from factory. Save agents large profits. **Over 100,000 in use.** Catalogue and testimonials **FREE.** Write at once. Address (in full),

CASH BUYERS' UNION
158-164 West Van Buren St., B-345 Chicago, Ills.

In writing, mention GLEANINGS.

SPRAYING

with our new
Kerosene Sprayers
is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.
West'n Ag'ts Henion & Hubbell, Chicago

In writing, mention Gleanings.

WOVEN WIRE FENCE

With our Duplex Automatic Machine you can make a genuine Rabbit-Proof fence, and one that is also Horse-high and Bull-strong for **16c A ROD** a Hog fence for 12c. and a Stock or Chicken fence for 18c a rod. Plain, Coiled Spring and Barbed wire to farmers at wholesale prices. Catalogue Free.

KITSELMAN BROTHERS, Box 51 **Ridgeville, Indiana.**

In writing, mention GLEANINGS.

BOWEN
CABLE STAY FENCE CO

16 to 24 cts. Per Rod.

$10 For a machine to build the cheapest strongest and best fence made of wire. No royalties, no farm rights, machine easily and quickly operated by any farmer.
Send for large circulars

Strongest Combination

NORWALK.O.

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A Spring at Each End

of a wire mattress won't do. It must "give" wherever one chances to touch it. So in wire fence, the spring is needed wherever the shock may come. The **continuous coil** principal is the only solution, and it **belongs to us only.** See "ad" in next issue.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

In writing, mention Gleanings.

BUGGIES, Carts, Surries, Phætons, Spring Wagons,
Harness and Saddles shipped C. O. D. anywhere to anyone with privilege to examine at lowest wholesale prices. Guaranteed as represented or money refunded. Send for illustrated catalog and testimonials Free. Addr. (in full)

CASH BUYERS' UNION, 3 .5 **W. Van Buren St., B345 CHICAGO**

In writing, mention Gleanings.

We PAY CASH each **WEEK** the year round, if you sell Stark Trees. Outfit free.
STARK NURSERY, LOUISIANA, MO., Stark, Mo., Rockport, Ill., Dansville. N. Y

PRAIRIE STATE
INCUBATORS AND BROODERS.
THE WORLD'S LEADERS.
Our Stock of Poultry Supplies the BEST.
Catalogs on application.

HENRY A. DREER, 714 Chestnrt St., Phil., Pa.

In writing advertisers, mention GLEANINGS.

HATCH Chickens BY STEAM—
With the **MODEL**
EXCELSIOR Incubator

Simple, Perfect, Self-Regulating. Thousands in successful operation. **Lowest priced first-class Hatcher made.**

MODEL EXCELSIOR

Circulars free.
Send 6c. for
Illus. Catalogue.

GEO. H. STAHL.
114 to 122 S. 6th St, Quincy, Ill.

In writing, mention GLEANINGS.

THE SUCCESSFUL INCUBATOR

is the standard machine for hatching strong, healthy chicks. Self-regulating, patent turning trays, drying room for chicks, non-explosive lamp—just a few of its good points. Sold under positive guarantee to work perfectly. Beautifully made and durable. Our 128 page catalogue describes them fully; tells many things about poultry raising you should know. Mailed for 6 cts.

DES MOINES INC. CO. Box 503 **DES MOINES, IA.**

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START IN BUSINESS!
HATCH THOUSANDS
WITH THE PRAIRIE STATE
INCUBATOR
200 FIRST PREMIUMS.

Send for CATALOG.

PRAIRIE STATE INC. CO.
HOMER CITY, PA.

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THE WHOLE STORY

of successful incubating and brooding chicks is told in our new 225 page catalogue. Full description of the best machines to use for the purpose. Cuts and instructions for building **modern, economical poultry houses; poultry supplies** and cuts and prices on leading varieties of **pedigree poultry;** prices on **eggs for hatching,** etc. Full of valuable information to the man or woman **who keeps hens.** We send it to any address on receipt of 10 cents.

RELIABLE INCUBATOR & BROODER CO., Quincy, Ill.

In writing, mention Gleanings.

Satisfaction guaranteed or money refunded on every

MARILLA
INCUBATOR & BROODER

we sell. Are not those reasonable terms? That shows you how much faith we have in our machines. Either HOT WATER or HOT AIR machines. A child can work them. Eleventh year on the market.

THE MARILLA INCUBATOR CO.
Catalog 4c. stamps. **Box 18 Marilla N Y**

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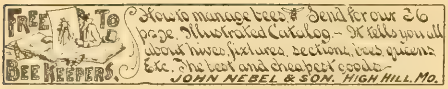
Catalog Free. A. I. Root Co.'s Goods
for Missouri and other points, to be had from
JNO. NEBEL & SON, HIGH HILL, MO.


FREE TO BEE KEEPERS.

How to manage bees. Send for our 36 page Illustrated Catalog.— It tells you all about hives, fixtures, sections, bees, queens Etc. The best and cheapest goods—

JOHN NEBEL & SON. HIGH HILL, MO.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.

In writing advertisers, mention GLEANINGS.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

A **FINE STOCK** of strawberry, raspberry, and blackberry plants, crates, and baskets. For price list, address H. H. AULTFATHER, Box 146, Minerva, O.

QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.

W. H. LAWS, Lavaca, Seb. Co., Ark.

In writing, mention Gleanings.

Rootville Wheels Cheap.

ONE $75.00 AJAX.

Gent's wheel, belonging to E. R. Root; long cranks, pneumatic saddle, large tires, 70 gear, cycloidal sprockets, finished in blue; very easy running; as good as new, nearly. $30.00.

ONE COLUMBUS, $75 MODEL.

Belonging to J. T. Calvert, 6¾-inch cranks, large tubing, flush joints, divisible cranks, cycloidal sprockets; ridden but little. $30.00.

ONE $100 CLEVELAND.

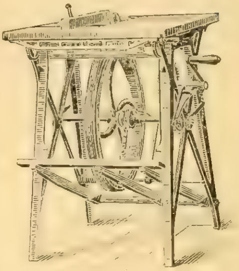
Belonging to A. I. Root—the easiest-running wheel, he says, he ever owned; wood reversible bars, clincher tires, keyless cranks, large tubing, flush joints; in fine running order. $42.50.

ONE $150 COMBINATION TANDEM.

Belonging to E. R. Root, made by the Remington Arms Co.; ridden but little, not over 50 miles all told, and almost new; long cranks, wood handle-bars, large tubing, long reinforced drop forgings; in fact, the strongest and most rigid tandem ever built, for only $55.00.

The Rootville folks always buy the latest bicycles every season; and, desiring to be strictly up to date with all the latest improvements, we offer our wheels cheap. If you want one of these bargains, speak soon. Catalogs and fuller particulars given on application. Honey taken in exchange for any of the above wheels.

THE A. I. ROOT CO., Medina, Ohio.



Barnes'
Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. *Machines on trial.* Send for illustrated catalogue and prices.

W. F. & John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

In writing, mention Gleanings.

"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass. Ave., Indianapolis, Ind.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

In writing, mention GLEANINGS.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

EGGS FROM prize-winners—Barred and White P. Rocks, Light Brahmas, Single-comb Brown, White, and Buff Leghorns, and Black Minorcas, 13 for $1.00; 30 for $2.00. Send for circular.

CHAS. RUE, Minerva, Ohio.

In writing, mention Gleanings.

Strawberry, Raspberry, Blackberry Plants *at one-half usual price.* Fine stock. Catalog free.

EZRA G. SMITH, Manchester, N. Y.

FOR SALE.—Red-clover seed $4.00 per bu.; 4 bu. or more to one place at $3.75 per bu. Italian bees, golden or leather-colored, $4.00 per colony.

EDW. SMITH, Carpenter, Ill.

FOR SALE.—One Winchester breech-loading rifle, 38-55; one saw-arbor, connected bearings, 1-inch hole; one Root foundation-machine, 10-inch, good as new. V. W. KEENEY, Shirland, Ill.

Cole's GARDEN PLOW.

Send quick for circulars giving description and price. **G. W. COLE, Canton, Ill.**

FOR SALE.—Extracted clover honey, in 60-lb. cans, f. o. b. at 6c. C. H. STORDOCK, Durand, Ill.

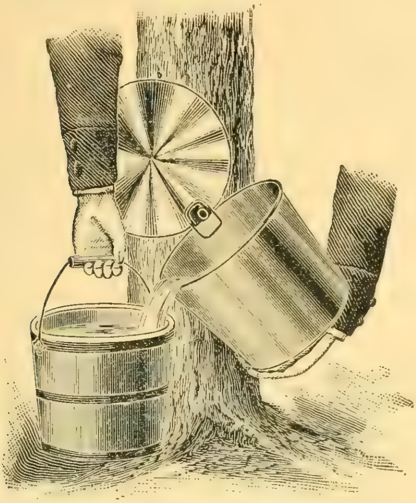
BETTER THAN KLONDIKE GOLD, $3.60 FOR $1.

N. Y. Weekly Tribune, greatest 20-page newspaper in U. S.	$1.00
Young People's Weekly, religious, colors, 12 pages, size Youth's Companion	.60
Farm Journal, best 24 page farm paper; most popular in the United States	.50
Poultry Keeper, 20 pages, printed in colors. It leads; others follow	.50
P. K. illustrator No. 1, 100 illustrations, poultry-houses, incubators, brooders, etc	.25
P. K. illustrator No. 2, 75 illustrations, artificial incubation, care of chicks, etc	.25
P. K. illustrator No. 3, poultry diseases, gapes, roup, cholera, moulting, etc	.25
P. K. illustrator No. 4, judging fowls, description of breeds, mating, points, etc	.25
For only $1 we will send these 4 papers one year and 4 books, postpaid, grand total	$3.60

Sample P. K. with other offers free. **POULTRY KEEPER CO., Box 37, Parkesburg, Pa.**

Maple-Sugar Supplies.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10 or more. We do not sell evaporators, but think we can do you some good on spouts, pails, covers and, cans. Our tin pails and cans are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by buying carload quantities we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.

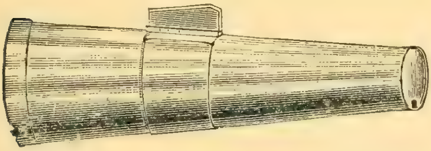


BUCKET WITH HINGED TIN COVER.

This cut shows the manner of hanging the bucket on the spout, and also the manner of emptying with the hinged tin cover. Most progressive sugar-makers nowadays use covers of some kind.

Record hinged tin covers................	$5 00 per 100.
Reversible woodcovers....................	3 50 per 100.

RECORD SAP-SPOUT.

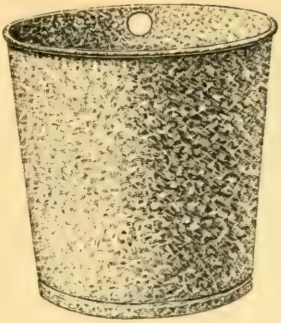


This spout is cheaper than any other made,and we believe it is as good as any, if not better. It is used almost exclusively in this section. Price $1.00 per 100; $8.00 per 1000.

TIN SAP-BUCKETS.

Grade of tin. Price per 100.	10-qt.	12-qt.	15-qt.
IC charcoal sap-buckets...	$13 50	$14 50	$17 50
IX charcoal sap-buckets	15 50	16 50	18 00
IC coke-tin sap-pails............	12 00	13 00	15 00
IX " " "	14 00	15 00	17 00

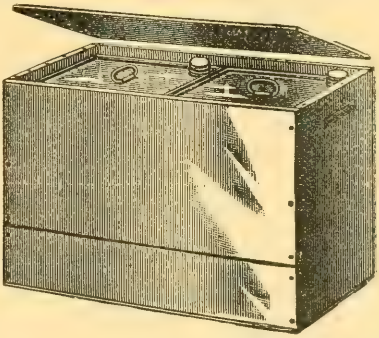
The sap-pails in above table, of coke-tin, are offered to compete with other cheap buckets you will find in the market. The tin in these cheap pails is just the same as in the better ones, except the coating, which is much thinner. We guarantee these equal or superior to the other cheap buckets in the market, but recommend, instead, the higher-priced ones with better coating; or, better yet, the galvanized. All the galvanized buckets, as well as the 10-qt. tin ones, have holes punched like cut below, while other tin buckets have wire loops.

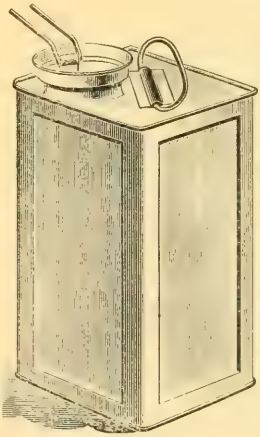


We are offering special bargais this year in galvanized-iron buckets. These are by far the strongest and most durable bucket made. The blank steel is cut out and made up into pails, and then the whole is dipped into molten metal, and coated all over, inside and out. All seams are filled up so they can not leak, and rust has no chance to work on them anywhere. If you want any thing better than the I C tin, the galvanized bucket is the one to select. There is only one objection to them, as compared with tin. The surface is somewhat rougher than tin, and therefore they are not quite as easily cleaned. This is a slight objection as compared with the greater strength and durability of the pails.

Price, 10-qt. galv., $13. 50 per 100; 12-qt., $15.00 per 100; 14-qt., $16.50 per 100.

ONE-GALLON SQUARE CANS.





This is the favorite package for syrup; being square, it will pack in the smallest space. Our cans this year all have the 2 inch, lever-seal cap as recently described, and shown in cut opposite. They are warranted not to leak, which is more than you can say of home-made cans.

Price, 1-gal. square cans, with lever seal, $9.00 per 100; 6 in a box, 80c per box; $7.50 for 10; 10 in a box, $1.25 per box; $11.50 for 10.

½-gal. cans, 2-inch, lever seal cap, $7.50 per 100.

¼-gal. cans, 2-inch, lever-seal cap, $6.50 per 100.

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These are largely used for storing and shipping honey, and for that purpose there is nothing better. Many also use them for syrup. as they cost less per gallon. They are also furnished from Medina with 2-in., lever-seal cap, or 1½-in. screw cap as preferred.

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5-gal. cans, 20 in a box, @ 26, $5 20.
5-gal. cans, 2 in a box, 70 c; 10 boxes, $6.50.
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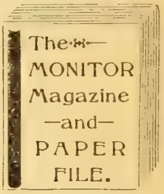

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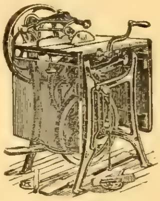

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Honey Column.

CITY MARKETS.

MILWAUKEE.—The demand for honey during the last thirty days has not been equal to our expectations, and sales have dragged, thus preventing us from being able to respond on sales as we had hoped. The supply of comb honey is good, and we continue to quote: Fancy 1-lb. sections, 11@12 c.; A No. 1, 11; No. 1, 10@11; dark and inferior, 8@9. Extracted, in barrels, kegs, and cans, white, 5@6; ditto dark, 4@4½; beeswax, 25@27.

Feb. 19. A. V. BISHOP & Co.,

KANSAS CITY, MO.—There has been no change in the honey market since our last quotation. Fancy white, 1-lb. comb, 10 c.; No. 1 ditto, 9@10; comb, amber, 8@9; dark ditto, 7@8; extracted, white, 5@5½; ditto amber, 4½@5; ditto dark, 4; beeswax, 20@22.

Feb. 19. C. C. CLEMONS & Co.

CINCINNATI.—Demand is slow for comb and extracted honey. We quote comb honey at 10@13 c; best extracted, white, 3½@6. There is a fair demand for beeswax at 20@25, good to choice yellow, with a fair supply.

Feb. 21. C. F. MUTH & SON.

DETROIT.—Fancy white not so plentiful, and selling at 12@13 c.; A No. 1, 10@11. These prices are for clean packages. Untidy lots of good honey are much cheaper—No. 1, 10 c.; fancy dark, 9@10; No. 1, 8. There are a good many lots of dark on commission row that are undesirable, and are being sold at very low prices. This is hurting the sale of the better lots. Extracted is 5@6; beeswax, 26@27.

M. H. HUNT,
Feb. 22. Bell Branch, Mich.

BUFFALO.—A car of California orange-blossom honey in our market is selling freely at 11½, and for well-filled sections. There is some call for extracted honey; but outside of this and the California honey the demand is very slow. Fancy, 10½@11; A No. 1, 10@10½; No. 1, 9@9½; No. 2, 7@8; No. 3, 5½@6. White extracted, 6@6½; dark ditto, 5@5½; beeswax, 27@28.

Feb. 22. W. C. TOWNSEND.

CHICAGO.—Fancy white is not plentiful, and sells at 11 c.; good No. 1, or grades of that character, are abundant, and sell at 8@9; amber and dark, 7@8; extracted, white, 5@6; amber, 4@5; dark, 4; beeswax, 26@27. Much of the comb honey is granulating in the cells, especially where any trace of sweet clover or alfalfa is found to be a component part.

R. A. BURNETT & Co.,
Feb. 18. 163 South Water St.

NEW YORK.—We are having a good demand now for comb and extracted honey. Our stock of comb is diminishing; and before long, if present demand keeps up, it will be cleaned out. Extracted buckwheat is in good demand now, and we would advise bee-keepers to ship at once if they have any to dispose of. Prices are unchanged.

Feb. 23. HILDRETH BROS. & SEGELKEN.

BOSTON.—Honey has moved freely the past ten days, and stocks are well cleaned up, with a good demand, We quote: Fancy white, in cartons, 13 c.; No. 1 white, 11@12½; No. 2, 9@10. Demand for dark honey is very light.

BLAKE, SCOTT & LEE,
Feb. 10. Boston, Mass.

DENVER.—We can quote our market the same as in previous issue There seems to be a steady improvement in extracted honey. Best grade of comb honey, in cartons, 11½ c. There is a grade on the market here selling at 10 c. by commission men; No. 1 white extracted, 6 c.; beeswax, 25.

R. K. & J. C. FRISBEE,
Feb. 21. Lockbox 1014, Denver, Col.

CLEVELAND.—We quote selling to day as follows: Fancy white, 12@13 c.; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber ditto, 5½@6; beeswax, 26.

A. B. WILLIAMS & Co.,
Feb. 19. 80 Broadway.

MINNEAPOLIS.—Market remains the same. Fancy white clover, comb, 10½ c.; ditto extracted, 5½@6 Demand is a trifle better, but no radical change expected.

Feb. 19. S. H. HALL & Co.

ST. LOUIS.—Quotations on honey are nominally the same as before. The stock of honey in our city is large, and it is something that it is hard to push. When parties do not want it they will not buy.

Feb. 19. WESTCOTT COM. Co.

CHICAGO.—White clover, comb, 1-lb. sections, 10½@11 c.; dark ditto, 8@10; extracted, white clover, 6@6½; amber, extracted, 5@5½.

Feb. 19. AMERICAN BROKERAGE Co.

PHILADELPHIA.—No change since previous quotations. Honey is not arriving very freely. Fancy comb is mostly cleaned up. Beeswax is a little firmer.

Feb. 21. W. A. SELSER.

FOR SALE.—Cheap. 25 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

FOR SALE.—Extracted clover honey, in 60-lb. cans, f. o. b. at 6c. C H. STORDOCK, Durand, Ill.

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The Bee-keepers' Review

For January is really an old-time, special-topic issue on the no-bee-way, or plain section, and the "fence" separator. It gives the views of such men as Crane, Heddon, and Bingham. Mr. Aspinwall writes at length upon foundation, and particularly in regard to the new, no-wall style, and there is a fine picture of a super of partly filled sections in which the comb was built from this kind of foundation. The frontispiece is from a photograph of eight filled sections, four of which are of the old-style, and the others of the plain variety. It is an object-lesson that all can understand and appreciate.

Better send $1.00 for the REVIEW for 1898 and receive the December number free, or, if you prefer to see samples before sending your dollar, send ten cents for the December and January numbers; and if you then decide to subscribe, the ten cents that you have paid may apply on the subscription.

W. Z. HUTCHINSON, Flint, Mich.

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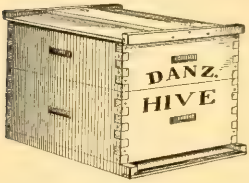

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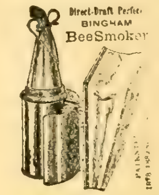
Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.

$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. MAR. 1, 1898. NO. 5.

STRAY STRAWS FROM DR C. C. MILLER

IZAL is the drug that *Bee Chat* feels sure may be relied on to cure foul brood.

WHAT AIKIN SAYS, p. 136, reminds me that one year two colonies stored white honey and all others dark. Last year, in the same apiary, a few stored dark and all the rest light.

FOR A TENDERFOOT our old friend C. A. Hatch hasn't done so badly in California—200 lbs. per colony from 275 colonies—the best report the *Pacific B. J.* has had for the year.

SOMNAMBULIST thinks, in imitation of the pink law for oleomargarine, there might be a pink or some other colored law for adulterated honey. [Somnambulist is right, as usual.—ED.]

POSTAL SAVINGS BANKS are getting much attention nowadays; and, from the general demand, they are likely to come. This country ought to keep up with the procession in having postal savings banks and free rural mail delivery. [Just so, doctor.—ED.]

TALL SECTIONS about 6x5x1½, four piece, were used long ago by Aikin, who says, in *Progressive*, "I want to tell every one who reads this that I never had such nicely finished sections of any other style." He thinks it important that top and bottom bars be about as wide their entire length as thickness of finished comb.

THE *American Bee-keeper* for February is a surprise. Diminished in size by knocking the foolishness off the last end, it is doubled in value by wide-awake editorials and other good matter that show that the brains of a live bee-keeper have been to work at it, instead of having it make itself. H. E. Hill furnishes the brains. [See editorials.—ED.]

BEE CHAT is the name of a new bee-paper in England, quarterly, edited by S. Simmins, the well-known author of "A Modern Bee-farm," and originator of Simmins' non-swarming plan, keeping the bees always building combs below brood-nest, but never allowing them to be finished there. One page is devoted to poultry. The first number is promising.

BOX HIVES and frame hives are not the only kind used in Germany. A. Gustin in *Rucher Belge*, favors for many the use of mixed hives—that is, a skep surmounted by supers with movable frames. An inverted cone is the form preferred for the skep, smaller at bottom than top, as bees cluster and prefer combs in that form. Undoubtedly a frame would be more easily handled if it were shorter at bottom than top.

QUESTION 2, p 141, has an answer of only three letters. I'd have used only two-thirds as many. [So you would have stuck on the little word *no*. Well I have read over the question and my answer again, and I am of the same opinion still. But say, doctor, I am surprised that you did not catch me up in the answer just following, where I made that whopping mistake or error of fact. I said that there would be more dead bees on the cellar bottom during the *fore* part of the winter than the latter, when in fact I *meant* just the other way.—ED.]

CALIFORNIA B. K. EXCHANGE handled for the season 484,287 lbs. extracted honey, 21.8 per cent white, 51.4 per cent light amber, 26.8 per cent dark; 1467 cases comb. Total business, $59,302.—*Pacific B. J.* [Who said the California Bee-keepers' Exchange was a failure? Sixty thousand dollars in one year is not bad for the first year or so of its existence. We wish the Exchange success, and will do all in our power to encourage it. There ought to be such an organization in the East, and probably will be in time if the California Exchange continues to prove a benefit and a blessing to its members.—ED.]

FOR END SPACING of brood-frames, I thought I liked bent nails; but after trying staples I think I like them better. With nails the frames slide into place a little better, but then they slide out rather too easily. But any kind of end-spacing is a great comfort compared with the nuisance of having the end of the top-bar glued fast, unless in the course of time the end-spacers should themselves become badly glued. [Your conclusion gives me a lot of satisfaction. You remember we debated a long time (that is, members of The A. I. Root Co.) whether we should use a staple or a bent nail. I am glad your experience justifies the wisdom of our decision.—ED.]

PLEASE TELL US minutely, Mr. Editor, about getting section honey from two-story hives. I'm green with envy; doesn't seem to work right for me. Yet one season the only super of honey I got was from a two-story colony. [Now look here, doctor, after I have written all I have on the subject, told all I know about it, and perhaps more too, for you to *now* ask me to please tell you about it "minutely," is, well—adding insult to injury. What is it you want to know, or do not know? Please put on your specs, and read over, for instance, what I said on page 141.—ED.]

DAN WHITE is just right—no use trying to deny that the average sample of extracted honey doesn't begin to equal in quality good comb honey. If extracted-honey men want to keep up with the procession they must give up the figment that comb honey owes its higher price merely to its looks. All creation is ransacked to find plain sections, fences, and what not to make sections look better; and if half the pains were taken to make extracted honey taste better, comb-honey men would weep over the lessening of the gap between the prices of the two kinds.

"I HAVE WATCHED hundreds of bees as they came into an observatory hive, whose colony was at work in sections, and never saw a *single* loaded bee offer to go up to those sections" Thus says Doolittle in *Progressive.* According to that, wedging up the hive can make no difference about filling outside sections. [But why don't you go into the further question that Mr. Doolittle really touched upon, whether raising up the hive or increasing the depth of the entrance discouraged swarming, and possibly increased the amount of honey? I should like to see you and Doolittle lock horns again. I will furnish the arena, and here is the red rag.—ED.]

PLEASE OBLIGE ME, Mr. Editor, by calling in the entire edition of GLEANINGS, Feb. 15. Then knock out that "not" on p. 132, first column, 7th line from bottom, making it "I do know" that two or three comb nuclei winter well with a division-board between them. Have W. P. and Barney combined to make out I "don't know," even in the few cases I do know? [Just how that *not-y* word got into the circus without a ticket is one of those mysteries that perhaps we shall never unravel. One theory is that, from mere habit, our printers had got into the habit of saying "I don't know," and hence concluded that you meant to leave it in. Be that as it may, we regret its insertion, and will take warning to be more careful, if possible, in the future.—ED.]

I NOTICE, Ernest, that you and Hutchinson are going to go easy on correspondents' spelling. Good. I've long *wisht* you'd let things be *spelt* the way they *ot* to be *spelt.* [I wish both precedent and custom would permit us to spell by the phonetic method; that we might even go as far as Bro. York, in the *American Bee Journal;* but as we do so much printing for other parties, our printers and proof-reader would be in a snarl of confusion if we attempted to carry on the two systems—can't do it But isn't *speld* a better word than *spelt?* To use *past* for *passed*, and *must* for *mussed* destroys many a fine shade of meaning. Probably our only hope is in making a new alphabet, and then find somebody who can determine how "the English languij she is pronounct."—ED.]

BOARDMAN is with me for cleats instead of handholes, and now comes Doolittle in *Progressive*, and says, "After trying every thing by way of something to lift hives, I prefer the cleat to any thing else; especially where hives are carried to and from the cellar every fall and spring." He likes cleats ⅝, square, one on each end. [I am half inclined to believe that you and Boardman are right; but keep this to yourself: We make the handholes because they are cheaper, take less room in crating, and because bee-keepers generally are satisfied with them. I suppose the fact is, the average bee-man does not lug his bees in and out of the cellar as much as you and Boardman do, and that is why he doesn't complain. —ED.]

GLEANINGS mentioned, p. 6, a record of 700 lbs. from Texas. Editor Hill, of *Am. Bee-keeper*, takes alarm at the shrinkage of 300 lbs. in that Texan report of years ago. Better reconsider, Ernest. But say, friend Hill, you've done still worse by awarding the belt to W. S. Hart for 1200 lbs. from two colonies. [When I spoke of that record of 700 lbs. on page 6 I could not quite determine in my own mind whether it was 700 or 1000. Rather than make the yarn too big, I thought it would be safer to take the lower figure, and so named it in my answer. Some years after the party reported that big yield, one or two of his neighbors, who claimed to know the facts, and who met me at one of the conventions, said the record was greatly "padded." Perhaps after all my 700 mark was nearer correct than the 1000 mark that you and Mr. Hill say was actually reported.—ED.]

PROF. COOK has riz up against sweet clover. Called to account by Editor York, he hardly seems willing to admit the testimony of those who say it's valuable for forage—thinks stock must have been starved to it, or else exceptional soil or conditions gave exceptional quality. Yes, but there's such a lot of exceptions. [My, oh my! where has Prof. Cook been these years? If he will come out east again and call upon friend Boardman, and a dozen others I could name, at the right time of year, he will find that stock often prefer it to other fodder. The Ohio Experiment Station once opposed the clover, but has now taken back all the bad things it said of it, and actually favors its introduction. Notwithstanding we see miles of it growing like weeds along the roadside, it certainly has proved to be a great blessing, because it grows where nothing else can live. It is true, very many regard the clover as a noxious weed; but that does not prove that it is. In some parts of the West there are hundreds of acres of it grown, and hundreds of tons of if cut for fodder. Where nothing else grows it is a Godsend. I should almost as soon expect to hear Prof. Cook say the world is not round as to argue against sweet clover.—ED.]

Ridge-Pole Musings

SCALE-COLONY RECORDS ANALYZED.

How Colonies are Affected by the Flow, whether Free or Scant; Wax Secretion; Comb and Extracted; Comparative Yields. Some Interesting Results.

BY R. C. AIKIN.

For several years my honey-flows have been poor. My average yield in 1896 was 10 pounds or less; 1895 and 1894, somewhere about 20 to 25 pounds. The 1894 flow extended over a period of 47 days, showing a gain of 70 pounds. This was not a net gain of ripened honey, the total being obtained by adding the daily gains, which, of course, would shrink much in process of ripening. One day only did the gain reach the 6 pound notch; and the two next best days, 4½ each.

The flow for 1895 lasted 27 days, making a gain of 70 pounds as against the same number of pounds in the 47 days the preceding year, while in 1896 the time was 26 days with a total gain of 53 pounds. Notice that the 1894 flow gave a total gain of 70 pounds, but was extended over a period of 47 days, very few of those days going over 3 pounds, the whole average being only about 1½ per day. This gave very unsatisfactory super work. While the surplus was not far from 20 pounds, it came in so slowly that even strong colonies could scarcely be induced to work sections, many colonies not doing any thing in them.

I want here to call attention to the effect of such a flow on different colonies. First compare two general classes — those for extracted and those for comb. The extracted-honey colonies having full sets of combs and free access to them, the storing would be done largely in the extracting-combs, the brood-combs thus relieved of pressure being filled with brood. The limited quantity of honey coming in, together with the great amount of bees and surplus room, brings about a condition favoring not only a less number of combs containing honey in the brood-chamber, but also a thin, lank, or lean condition of these combs. Just see how easy it would be for a beginner to get almost the entire gatherings of a colony into the surplus; and the smaller the brood chamber the less honey left in it. Here, then, are two important factors that ought not to be lost sight of, though usually they are overlooked; viz., the great amount of brood and the leanness of the combs, because there is nothing to induce close filling, there being abundance of room above.

The comb-honey colony has a very different condition to contend with, sections being given with starters only, or full sheets of foundation. The inducement to occupy surplus arrangements may be summed up in this order: First, ready-built combs; second, large sheets of foundation as in extracting or brood frames; third, sections with full sheets of foundation; and fourth, sections with starters only. If honey is coming in we may expect a reasonable secretion of wax; yet the flow being so very light there is very little inducement to start comb-building in a new place. There is, however, plenty of wax secreted to build any comb needed; but the outlook being so poor, this wax is used in lengthening the cells in the brood-combs rather than building in sections, so the light daily gain is crowded into the brood-combs.

There, friends, don't you see how easy it is to get surplus extracted when you would not get surplus comb honey, or that your extracted may exceed in quantity your comb, even though not one pound more was gathered by those run for extracted over those run for comb? This brings in the question of wax secretion and cost of comb-building — a question upon which I am found upon the minority side. I am not prepared to make a positive statement that wax secretion is either voluntary or involuntary; but I suspect that it is a little of both. I believe (and think I know) that wax is secreted when there is a prospect of its being needed, and always more or less at all times when honey is being gathered.

In that 47 days' flow in 1894, where the average daily gain was just about 1½ pounds, I did get more extracted per colony than comb, but also starved a lot of the extracted-honey colonies in winter, and had to feed many hundred pounds in spring. The comb-honey colonies could scarcely be induced to work in sections, except where bait-combs were. I put bait-combs in many supers, some in the center, some in the corners, some on one side, and some on one end. No matter where I put the bait-combs in the super, they (and usually they only) were filled.

I have been making comparisons as of one apiary or part of an apiary run for extracted, as against a similar lot run for comb. The work of individual colonies will, however, somewhat modify the results. If a colony run for extracted be very weak, or if the queen from any cause does not lay freely during the flow, the disposition will be increased to put honey into brood-combs. Hence it will be seen that a very strong colony with a vigorous queen laying freely during the flow may occupy sections, and store there. I have seen such cases, once the colony being started in the sections, almost the entire amount of stores gathered being put into the sections, while beneath was a great mass of brood, which proves my theory that there is no lack of wax secretion with which to build the comb; but the gain, being very slow, will not induce a disposition to comb-building. The same colony run for extracted would have the same conditions in a greater degree. With these very slow honey-flows it is almost impossible to induce bees to build comb, hence the great tendency to store in brood-nest when store-combs are not given.

Now consider the 1895 flow. The gross gain was the same as in 1894 — 70 pounds; but instead of being 47 days in gathering, it was only 27, the former being about 1½ per day and the latter about 2½. With this flow the super work was better. More new comb was built in sections than the previous year, though there was less time in which to build it. The finish was also better. The slower flow gave more time to edge in and crowd brood, more time for thorough ripening, hence less room needed in which to store, so less put in supers. In the rapid flow, besides the condition of increased bulk because of unripe honey, less opportunity was given to store in brood-combs vacated by hatching bees, and the greater number of loaded bees in each other's way, a greater degree of activity, and, perhaps, an increased wax secretion. Such conditions induce better super work, but put less honey into the brood-combs.

The flow for 1896 was 53 pounds in 26 days —an average of 2 pounds per day. Now, 53 pounds of nectar would not equal more than perhaps 40 pounds of the ripened honey, or but little more than enough to fill the brood-chamber Nectar gathered at the rate of 6 or 8 pounds per day would evaporate even more than the above estimate; and so, I suppose, would also that gathered in damp weather or in more moist climes. I think that, with one exception, this was the poorest yield I ever had, and the poorest by all odds since locating in this State, eight years ago. I reduced the number of comb-honey colonies, and took a little honey; also took a little extracted, but would have had more bees last spring if I had not taken a pound.

The 1897 flow was the best for several years. My records of this are more complete in details, and also much more fresh in memory. There were two flows. The first was from alfalfa, from about June 12th to July 13th; the second, cleome and sweet clover, beginning about August 1st, and continuing about three weeks. The alfalfa flow filled my brood-combs and well nigh half of my crop of surplus. I say *filled* the brood-combs, which is strictly true, because I unqueened; and as the brood hatched, the combs were sure to be filled. The first flow was the longest and the freest, giving about ⅔ the entire gain of both flows. The beginning of the second flow came just about with the beginning of the laying of the young queens; so between the moving-up of honey to make room for brood, and the honey coming from the fields, the super work in the second flow was greater than in the first. The movement from the brood-chamber even finished sections when the flow had practically ceased.

Putting the two flows together I had about a 55 days' yield, and very close to a 2 pounds a day average. My crop of surplus was about 45 pounds average — about the same whether comb or extracted. This flow showed several days that were good. Two colonies were used, and I have averaged on the basis of two. One did much better than the other—a matter I shall discuss in another connection; but considering that the two were used in these estimates I think the results more conclusive than in the preceding years when only one was used. The best colony showed in succession two days a seven-pound and two days a six-pound gain, the greatest single day's gain. The average daily gain was about 2 pounds, few days exceeding 3 to 4 pounds.

The records were made by weighing night and morning. A 5-pound gain would shrink over night 1 to 1½ pounds; hence had I weighed only each evening my record would not be so accurate as by the method pursued. The bees were rarely out more than 10 to 11 hours a day, many times not more than 9. I said my average of surplus was about 45 pounds. The average gain being about 2, and the number of days' duration 55, the total gain would be 110. Supposing the evaporating to be ⅓, I should have left almost 30 pounds per colony for winter stores. If ⅓ did truly represent the shrinkage. a large part of that shrinkage took place between the morning and evening weighings; hence we can not get rid of some discrepancies. I should judge that the actual total gain would be considerably above the figures given, so that the actual stores left with the colonies were very near 40 pounds

Here I want to call attention to a point prominent in this investigation; and that is the fact that it requires a flow of three to four pounds per day to give good work in sections, and more especially in the hands of any but an expert. The best average yield I have taken in recent years was 150 pounds per colony. Adding to this the winter stores, say 25 pounds, would make 175 pounds of ripened honey per colony. Allowing ⅓ for evaporation, the average daily gain of nectar must have been not less than 4½ pounds, for it was gathered in about 50 days. I weighed through the greater part of that flow, and know the gain was as much as 8 or 10 pounds some days, and I regret that I did not preserve the record.

Loveland, Col.

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THE HONEY MARKET.

Selling Produce around Home, or Shipping it to a Commission House; Organizing a Honey Exchange for York State; would Niver be the Proper Man to sell the Honey? the $1000 Reward on Shipping-cases.

BY FRIEDEMANN GREINER.

It may be all true enough that the professional honey-producer is to some extent to blame for the prevailing low prices of honey; but what can we do to remedy the trouble? that's the question. While I do not think the price of honey has come down any more than the other products of the soil, still I do wish, from the natural standpoint of selfishness, that honey would bring us more money. But it must be borne in mind that, through the division of labor, through specializing of the different twigs and branches of industry, much good has been accomplished. Mr. Terry has made a wonderful success of farming for his three products; viz., wheat, clover, and potatoes; the grape-grower specialist supplies the market more cheaply than the farmer dabbling in every thing did years ago. In the manufacture of any kind of goods, bee-keepers' supplies included, the same holds true. Large factories, for instance, are turning out "wagons" at a price astonishingly low—so low, in fact, that the mechanic of small means can not compete any more. Specializing helps to cheapen any product, honey included. It seems to me that all of this has been an advantage, a blessing, to the consumer.

If Morton's brother-in-law and Mr. Abbott are such good salesmen of honey, they ought to go into that business and let the production of honey alone.

It seems to me that it might be a beneficial institution if all honey could be gathered at certain different centers, from which a well-directed distribution might take place. The people would also learn to know these places, and come there to buy. The commission houses furnish such centers now, though in a very imperfect manner. But since I do not see any thing better at present, I confess I do not know what I should do without them.

I ship, each year, produce of a variable character, such as beans, poultry alive and dressed, capons, calves, honey, etc., and I have little fault to find with the commission man. I need him. Mr. Elwood needs him. The A. I. Root Co. seems to need him.

It is, perhaps, a foolish notion of mine; but I sometimes flatter myself that I can produce a pretty fair grade of honey, at least in a favorable season; but I have long been convinced that I make a very poor salesman. It requires a ready tongue in the first place—a quick and inventive mind; it may also be a help sometimes to be able to stretch the truth a little bit in order to effect a sale. I am not built that way, I know, and so I don't propose to go into the business. Let me tell you here a bit of my experience in selling honey.

It was about 12 years ago. I had but a small crop of honey—I think about 600 pounds from over 100 colonies. I started with this honey from Clark Co., Va., for Washington, intending to sell for cash at 14 cents per pound. My honey was nice blue-thistle honey, which always commands a good price. It had been carefully graded according to finish and weight. All of it was exactly of the same shade, not unlike my clover honey here at the North. With sample sections in satchel I spent two whole days trying to effect sales of my immense crop. My jaws fairly ached when the second day drew to its close; but the greater part of my honey was still unsold. I was what I called quite successful with one man, selling him six cases at 14 cents. But after he had paid me the price agreed upon he spoke somewhat like this: "Now, my good honey-man" (he evidently did not know my name was Friede-mann), "I want you to understand that I am not fooled, but that I take your honey for what it is, not what it is represented by you. I find no fault with it; it is very nice; my customers will eat it, and be well pleased with it; but — your honey is an *imitation*, just the same."

Well, well! I tried to gather together my scattered wits, and I brought all my available stock of eloquence to bear upon the man. The environment developed an eloquence I had no idea I ever possessed. My jaw nearly ran away with that which is supposed to be located a little higher up; but all was of no avail. I showed him the traces of propolis on the otherwise clean sections. He replied: "Oh! they are clean enough." I spoke of the want of exact uniformity in the make-up of the different combs. I said, "If my honey had been manufactured by machinery, as you say it is, all the combs would be exactly alike; if you will find me just two sections that are alike in every particular you may have the lot;" but his reply was, "Your honey is uniform enough." Said I, "It is very unlikely that a firm manufacturing such goods as these would send out such a greeny as I am to make sales for them." I actually offered him $10.00 for a pound of truly manufactured comb honey, of which he said he had handled large quantities; but on investigating he could not give me the firm of whom he had bought. Nothing, however, seemed to bring the man down, and I had to give him up as a hopeless case. I had not heard at that time of the A. I. R. $1000 offer; but later I sent him the statement, to which he has not replied, nor has he claimed the $1000 reward. At last I came to the conclusion that it was not a paying job for me to try to sell my honey. So I left the rest of it with a commission house, which made satisfactory returns soon after, and up to this day I am dealing with the same party.

Now, right here I want to ask you, Mr. Editor, would Mr. A. I. R. object to having his $1000 offer used indiscriminately by us honey-producers? It might be printed on a slip of paper, and thus pasted on every crate we are sending out. In view of the fact that this story of manufactured comb honey is still afloat, do you not think that, to act on this suggestion, would have a tendency to counteract the bad effect of it? And, if Mr. A. I. R. has no objections, let us know what the price will be of such slips by the hundred.

Another suggestion I want to make. Since it can not be disputed that but few people outside of the professional honey-producers understand how to handle comb honey, I believe it would be a good idea to let proper directions for handling honey in comb go with each honey shipping-crate. Such directions might be printed right on the sheet of paper commonly placed on top of the crated sections, or printed on a separate slip, and placed on top of the sections before adjusting the crate-cover.

The now advocated veneering partitions to be used in shipping-crates will, of course, be a decided help to the retailer; but I think he needs the instructions also. I am very much taken up with the veneering for the above-mentioned purpose, and shall ship no more honey without them, although I consider them unnecessary as a means to prevent broken-out combs doing damage to other sections in the transit. Frail honey, likely to break out by rough handling, should not be shipped, but kept for the home trade or home use.

Mr. Niver says in a late issue of GLEANINGS, that he successfully sold the honey of six producers last season. Good! and what I should like to see done is this: See him hired by the bee-keepers of New York to sell all the honey they produce next year. This might be more of a task than one man ought to undertake; but I should like to see it tried. I promise to join the company. To sell in the home market? and that in the honey State of New York? A doubtful undertaking! I have not the time nor the patience nor the gift to retail my honey, even if the prospect were such as to guarantee good pay for the time spent.

The grocers in my town sell honey, very fine honey at that, at less than what my crop netted me sold by commission houses. I should be obliged to buy up all the honey in my vicinity—good, bad, and inferior, get a monopoly on it (and that wouldn't suit Doolittle), before I could raise the price.

I have exhibited at our annual fairs, for many years past, always making a creditable attractive display, exhibiting in flint-glass jars, jelly-glasses, cans, and fancy comb. I have talked bees and honey on these occasions till I was hoarse, often having great crowds around me; but I never have sold five-dollars' worth of honey in all the time I have attended fairs.

I have advertised in the local papers, have sweetened the editors, donated to the preachers, and have given away ever so much otherwise; but in the development of my home market I have made a complete failure, and the commission man seems to be my only rescue. I should be very glad to find cash buyers for my yearly output, and I am sure others would too.

Naples, Ont. Co., N. Y., Jan. 15.

[Mr. Greiner has touched upon a number of things that deserve more consideration than they have hitherto received. Selling to a good commission house has its advantages, but it is possible honey would bring more if sold through a salesman. In the first place, very few good honey-producers would be good salesmen. It naturally follows, then, that the man who can produce the honey, but who is a poor seller, should employ the skill of one who can do the selling to the best advantage. Obviously enough, one honey-producer can not alone afford to employ a man to sell his crop. Mr. Greiner's suggestion, then, that the bee-keepers of York State choose some man to sell honey for a number of bee-keepers, is a good one. To make this scheme feasible, a sort of honey exchange would have to be formed; and it occurs to me that the Seneca, Ontario, and Tompkins Co. Bee-keepers' Associations should amalgamate into a sort of honey exchange, with a constitution broad enough to take in bee-keepers from all portions of the State who might wish to join on payment of a certain fee.

Whether this plan would be feasible or not I can not say; but those three county organizations are made up of a lot of live hustling bee-keepers, of whom Niver is a worthy sample — certainly a good salesman from what I hear.

Well, if the York Staters wish to consider it we will hold our columns open for further discussion.

Yes, we will permit the use of the $1000 reward card; but before it is put in form for a general label or sticker it ought to be revised and brought up to the present time. I do not know that it would have to be changed very much; but its use should be made to cover the present exigencies of the times. As to what else should be put on a shipping-case is another question. I know of no man more competent to deal with this matter than Mr. Elwood. If he will prepare copy for a sticker, telling how to load the honey, etc., we will submit it to our readers; and if it receives general sanction we can, if desired, print it in the form of a sticker and sell it at a price within the reach of all.

We have sold for years a sticker printed in red ink and bold-face type, telling how to load the honey, and general directions regarding its care. It reads as follows:

FRAGILE!
—— COMB HONEY ——
Handle With Extra Care.
Do not Move it on Hand-Trucks.
Do not Drop it.
Do not Dump it.
Set it down Easy.
Haul only on Vehicles with Springs.

☞ Load with the finger
pointing to the Bow,
Locomotive, or Horse.

Now, brethren, the subject is open for discussion. Fire in your suggestions.—ED.]

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NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

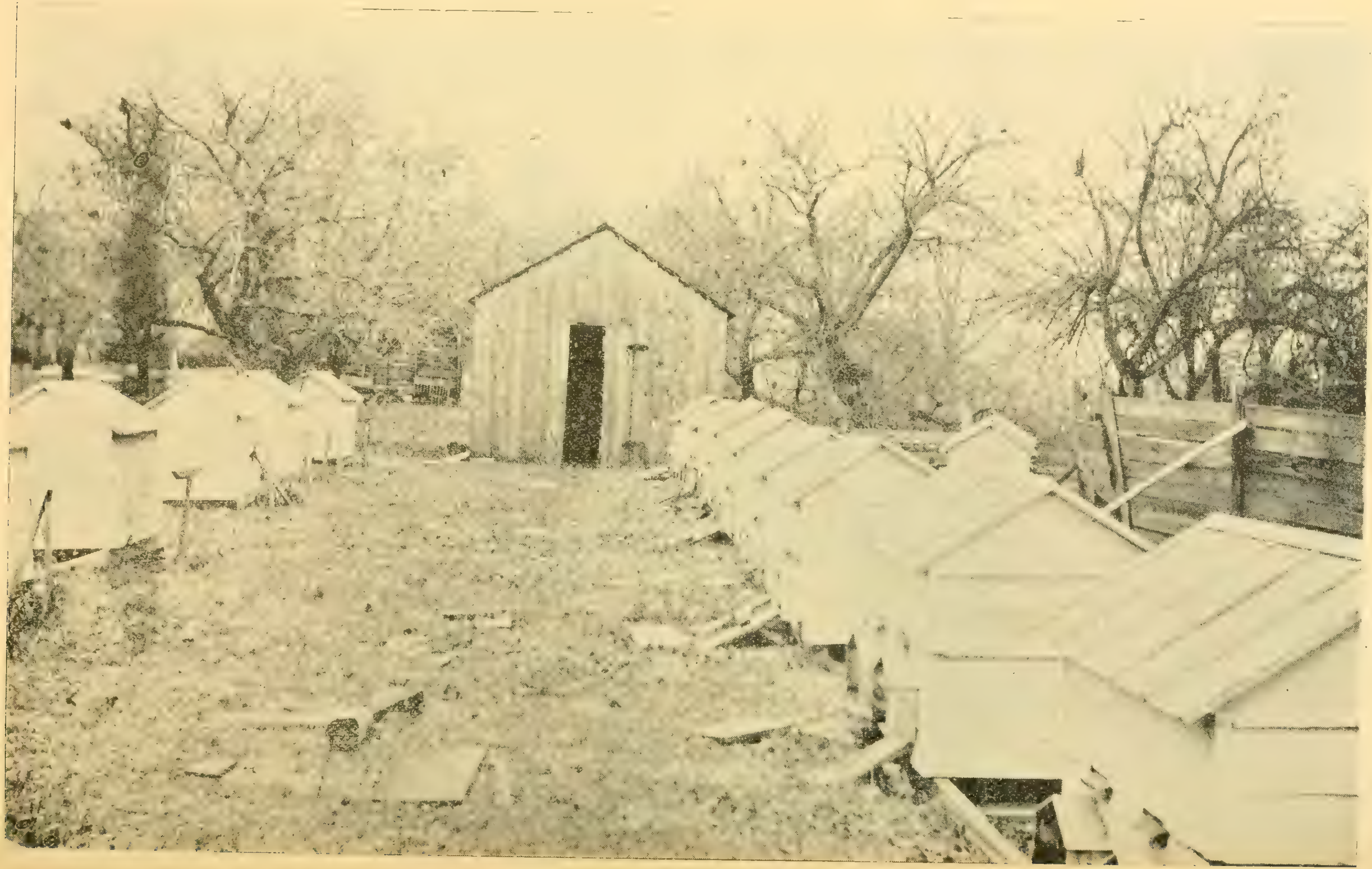
Coggshall's Apiary; His Methods of Work.

BY E. R. ROOT.

By reason of a crowd of work, and also on account of the crowded condition of our columns, I have been obliged to discontinue for a while my notes of travel among the bee-keepers of York State. I do not know exactly where I left off; for, instead of giving my notes in chronological order, I have taken hops, skips, and jumps.

W. L. Coggshall, as I have before told you, is one of the most extensive bee-keepers of New York, and who, as I have also stated, runs over 1000 colonies in some nine different out-apiaries. Since I left his place I have heard he is buying up more yards, and is going in heavier than ever. I do not dare tell you in tons how his crops of honey run from year to year; but I will tell you something of his methods.

I have before stated that Mr. Coggshall is wedded to no particular hive; but he does have a system, and a very thorough one, under which all his work is done, and by which his marvelous results in dollars and cents are secured. I have already shown you a view of one of his apiaries, and also a view of his beautiful home — the latter built and paid for entirely out of the proceeds of the bees.

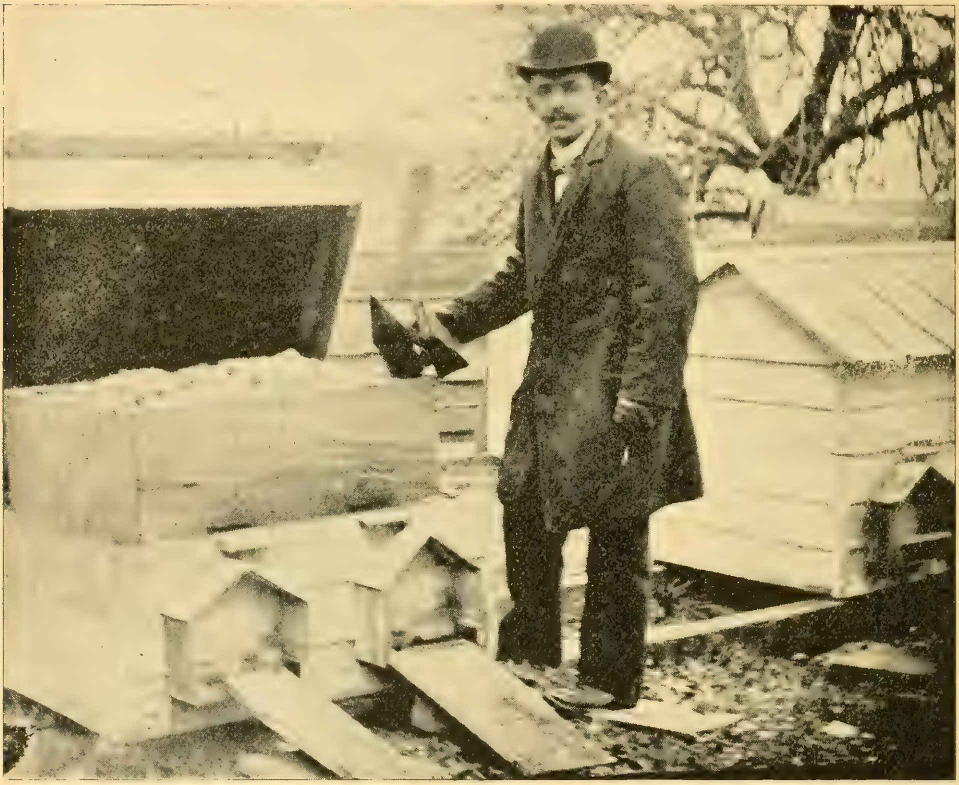


ONE OF W. L. COGGSHALL'S TENEMENT-HIVE OUT-APIARIES.

The first yard that I visited (I do not remember the name of it now, for he has a name for every one of his apiaries) is located an eighth of a mile, perhaps, from any roadway, and a quarter of a mile from any house, right in the midst of a big thicket of wood. On arriving at the place, there was that high-keyed hum as if robbing were going on; and, sure enough, bees were prowling around numerous cracks in the honey-house, going in and out. Unlocking the door and going inside, we found that bees had gotten into the bunghole of a half-barrel of buckwheat honey. At the time of our visit the barrel was nearly empty. Over each bunghole had been placed little strips of wire cloth to allow the honey to evaporate further if it would; but somehow the wire cloth had become displaced, and the bees were making things "interesting." Most of us would have become considerably excited, and would have made apologies for such a condition of things; but Mr. Coggshall took the matter very coolly, remarking, "Never mind; I will get the honey all back just the same."

Some of you may wonder why he uses honey-houses all full of cracks and crevices, through which the robbers might pass. Simply for the reason that it does not pay him, he says, to go to the expense of constructing a bee-proof building. It is made of cheap lumber, and so constructed that if, for any reason, he desires to move the yard from ground that is leased or rented, the building can be taken down, loaded on a wagon, and be set up in some other location. The cracks and crevices —what does he care for them?

The hives at this particular yard, I think, were some he bought of some one else, who could not make the bees or the location pay; but let me tell you when W. L. C. gets hold of the bees they have got to do some hustling —or rather, I should say, he and his men do the "hustling" and the bees "do the rest."



HARRY HOWE, AND COGGSHALL'S TENEMENT HIVES PREPARED FOR WINTER.

After spending a little time at this yard we drove to another, which was more after the style of the one in the engraving herewith presented, being in the open. The boys had preceded us, and were getting ready for extracting, as Mr. C. wished to show me his method of working. I was supplied with a veil, and it was well that I was. The boys had already mopped out the floor, gotten every thing in readiness, and were just preparing to extract as we arrived. The buckwheat-honey flow was about over, and I expected that robbers, of course, would make things lively. But that did not make any difference. The boys went at it just the same. With hands in pockets (to tell the truth, I did not like to have them anywhere else), with a heavy bicycle sweater on, knickerbockers and golf stockings, I felt reasonably sting-proof.

Now for the extracting, or, rather, getting combs ready, preparatory to extracting. A sort of hand-cart large enough to hold four supers, each eight frame L. size, was stationed just at our rear. In one corner of the hand-cart was placed an empty super. Observe this point, for I shall have occasion to refer to it again. Next, the cover of the hive was removed. The quilt was pulled up a little way, and smoke blown under. The quilt was then flopped up and down between each alternate puff of smoke, in such a way as to suck or draw the smoke down into the super, almost to the brood-nest below. This flip-flop act was continued for a space of perhaps half a minute, when I should judge that at least two-thirds of the bees were driven into the brood-nest below. I will remark, in passing, that the bees can not be driven out with smoke with the smoker alone nearly as well as when the smoker and quilt or cloth are used in the manner stated. As this method was described on page 700 I will not go into it fuller now.

Well, when two-thirds of the bees are out of the super the first frame is taken out and shaken in front of the entrance. It is then put into the super on the hand cart that I have already referred to. The next frame is grasped by the two projections at the end; and while in a horizontal position, and before it is out of the hive, it is given three or four rapid shakes up and down in the hive. It is true, a bee or two may be killed, but that makes no difference. The next frame is shaken in the same way *in the hive*; and if there are a few bees still clinging, they are brushed off from the comb with a long whisk broom that is tied to a short string around the waist of the operator. One sweep with Coggshall's broom on a side will usually finish up the job. This operation is repeated with each frame, shaking it in the super, not on the ground, until all the combs are freed of bees, when it is placed in the super on the hand-cart. During all this time the operator will use the brush perhaps once or twice, as he seems to be able to remove nearly all the bees by simply shaking.

The super that is on the hive now empty of combs is yanked off, sometimes kicked off,* during which operation it is freed of all adhering bees. It is then set on the hand-cart, and the next hive is gone through with in the same manner—that is to say, the combs are taken out and put into the super that was on the hive first opened, but now on the hand-cart filled with combs from which the bees were cleaned. The super now empty on hive No. 2 is kicked off and set on the hand-cart, and filled with combs from hive No. 3 in the manner before described. In this way the operator goes through the whole yard. As each hand-cart is filled with supers it is drawn over to the house where the boys are extracting, unloaded, and set before the next hive to be opened. The super that was kicked off from the last hive opened is set on the hand-cart, and so on the work of smoking, flip-flopping, and shaking of the frame goes on.

Well, by this time things got to be interesting, if not exciting. My hands went deeper into my pockets, while the stings went deeper into my clothes. In the mean time Mr. Coggshall had a kettle of rotten wood and rags, and was making a most awful smudge at the door of the honey-house. The smoke would rise and curl up, and come out of the openings of the building, the purpose of which was to keep robbers from getting in. Mean time the robbers were poking their noses into the combs outside that had been set into the supers preparatory to being extracted. But that made no difference. The combs were rushed into the house and extracted, bees and all.

"Did the bees sting?" you ask. Sting? I never saw them prod worse; but the men worked on just as though they were mere flies, or bees without stings. Combs were taken from the hives, rushed to the extracting-house with a celerity that was simply astonishing. I would not have supposed it possible to do such work in an apiary where the air was literally full of buzzing, mad, stinging bees. Mr. C. and his men are evidently used to this plan, and certainly do get the honey out of combs at a pace that is simply record-breaking. The men work so rapidly, flip-flopping smoke, shaking combs, that a bee scarcely has time to land its sting on the hands. Did you never notice that, to sting, a bee must take time to get a "good holt." Coggshall's men, for more reasons than one, don't give the bees time to get much of a "holt." The man who opened the hives worked bare-handed; I should have thought he would have had them filled with stings; but I don't think he received more than a *dozen*, all told, in his hands; but that was nothing.

I will not attempt now to tell you how many thousand pounds two of their men will take out in a half day or day. In the first place, I have forgotten what the record was; and in the second place, if I were to tell you I doubt whether you would believe it; and I could hardly credit the figures myself till I saw the men work.

In our next issue I will tell you something of Mr. Coggshall's method of extracting; the kind of extractor he uses, the sort of kegs he finds best adapted for storage and marketing.

The smaller engraving shows a view of one of the tenement hives dissected, and as it is prepared for winter. Each hive contains, I believe, eight colonies.

Harry Howe, one of Coggshall's "lightning operators," stands with smoker in hand.

When visiting at Mr. Coggshall's my photographic film gave out. After reaching home I reloaded the camera and sent it back to Groton, and Harry pressed the button. These and other views that I shall present in our next issue are his "shots," not mine.

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* Mr. Coggshall does not believe in taking *time* to pry the super off. A *yank* or a kick removes it, and clears it of bees besides. Of course, it angers the bees; but Mr. C. considers that of small moment compared with the time. He runs his bees, not for convenience, but for the dollars and cents; and if a kick will earn another cent or two he "kicks," stings or no stings.

VARIOUS MATTERS.

Queens Laying on Side of Comb Furthest from Brood.

BY G. M. DOOLITTLE.

I chanced to pick up the August 15th GLEANINGS, 1897, a day or two ago, and in glancing over Stray Straws my eye fell on this: "Did you ever notice that, in enlarging the brood-nest, the queen often lays first on the side of a fresh comb furthest from the brood-nest? I wonder why." And the editor adds, "I never noticed it."

Why my eye chanced to fall on this was that, in reading the matter before, I had marked the place with a leadpencil, in such a way that it told me I was to say a few words in the matter, for GLEANINGS. So, here goes although nearly six months have elapsed since I should have written what I had to say.

I was very much surprised that Bro. E. R. Root had never noticed this matter, for it was one of the things I noticed away back in the early seventies, when nearly every one was advocating the spreading of brood to stimulate colonies; and as I was also advocating the same thing in print, I expected that this thing would be hurled back at me to prove that the theory of having all eggs laid in the center of the brood-nest, where it is the warmest, was wrong, because, according to nature, the eggs were nearly always laid on the outside of the brood which the bees had. Well. I have not the time nor the disposition to go over all the ground in this matter now, but will say that, at all times when the bees are enlarging their brood-nest rapidly, and when pollen is also coming in rapidly, the first eggs laid in any comb near the brood, but so far not containing brood, are laid in the cells of said comb on the side furthest from the brood, the queen going clear around the comb to this furthest side to lay the first eggs, instead of laying them in this new comb right opposite the brood in the comb already occupied. If I have noticed this once, I have a thousand times, and for a long time wondered why it was so, as did Dr. Miller in his Straw; and the only satisfactory solving of the matter, to my mind, is that the pollen has all to do with it; for when little pollen is coming in I have generally found the first eggs next the comb having brood already in it. When pollen comes in plentifully the bees pack it in the cells immediately surrounding the brood, and hence it comes about that, when the hard maple is in bloom, in this locality, we have combs next the brood-nest solid, or very nearly so, on the side of the comb next the brood, on either side of the brood-nest, so that the queen can find no vacant cells to lay in; hence she is obliged to go clear around the comb to a point opposite the center of the brood in the comb adjoining, to lay, when the brood is on the increase. Immediately on her doing this, pollen is rushed into the cells of the next comb opposite the eggs she is laying; this, in turn, compels her to go to the opposite side of *this* comb to lay her eggs also, and thus it keeps on till the outside of the hive is reached. Soon after she has filled the cells furthest from the brood with eggs, hundreds of larvæ are hatching in the comb opposite the cells which are filled with pollen, this causing the bees to remove this pollen for use in the manufacture of larval food, when the queen now fills these cells with eggs, though she often scatters eggs all through this pollen mass, if there are any vacant cells, before the general removal of pollen. From this cause we always find, during proficient brood-rearing in May and the first half of June, the first eggs and the first sealed brood on the outside of the combs, or on the sides furthest from the center of the brood-nest.

ASSORTING SECTIONS.

Naughty Dr. Miller wants to get Doolittle and Hasty to fighting. See fourth Straw in February 1st number of GLEANINGS. Well, my sleeves are all rolled up, and I am ready, so I will just pitch in without any further preliminaries. My honey is all stored in sections which are held in wide frames, four sections to each wide frame. As these wide frames are unclamped, the eye soon decides to which grade the honey belongs, and so I quickly set those suitable for fancy in the XXX place; those for No. 1 in the XX place, and the rest in the X place, always having a wide frame of four sections standing at each of these three places as a sample for the eye to "work" from. My shipping-cases hold twenty sections; and so, as soon as I have five wide frames in any one of these three places, I take the sections from the frames, place them on a little tray, set the tray on the scraping-block, and the shipping-case close by; then, as I scrape, I set them in the shipping-case as soon as all propolis is nicely cleaned off. There, doctor, I know you will not want Hasty and Doolittle to fight again, as you will see that Doolittle's plan is only the Morton-Niver plan, with a little variation; and I had never thought the matter of enough consequence to mention it before; and until E. R. R. wrote up Morton I did not know that any one else worked as I was doing, nor that there was any importance attached to the thing, anyway. And this reminds me that, think as much as we will, there are many little kinks about bee-keeping that are of great help to us, that we use for years, without even being thankful enough for them to tell of the matter to others. I much prefer the X's for rules in grading to any thing else, for these can be put in the handholds of the case, out of sight from any one except the one who is in the secret.

FACING COMB HONEY.

I read Aaron Snyder's article and the editor's comments, under the above heading, with great interest, and wish to say a few words in the matter. As the sections are taken out of the wide frames, I am on the lookout for the "face" side of each section; and out of the 20 that are placed on the tray I set eight, each having an extra "pretty face," by themselves on one side of the tray, while the twelve not having quite so pretty faces are set on the other side of the tray. The eight are scraped first, and their "rosy cheeks" turned out, so that every passer-by may see them when the other twelve are set in the center of the shipping-case out of sight. Now, mind you, all of these 20 sections were XXX honey; but some of them had a little "fairer cheeks" than the rest, and it was these "fair ones" that were to say to the passers by, "Ho! turn this way if you would have something sweet!" And I consider such "facing" just the thing to do, and shall continue to do it unless "something gets me," as it is something that is customary, demanded by nearly all, and contains nothing of a dishonest nature.

A little boy about five years old, too tired for any thing but sleep, refused one night to say his prayers. His uncle, who was present, said, "O Harry! would you go to sleep without asking God to take care of you during the night?" The little fellow answered, "I didn't say 'em last night; I ain't goin' to say 'em to-night, and I ain't goin' to say 'em to-morrow night; and then, if nothin' don't get me, I ain't goin' to say 'em no more."

And now a word about those apples the editor tells us about. Apples are graded and fixed very much as are my cases of honey, and, as the editor was told, "everybody *expects* it."

A professional apple barreler was through this section this fall, and as he was in the orchard adjoining my bee-yard I went to see him. I found him sorting "facers," as he called them, for his No. 1 apples. I asked him about the matter, and he handed me his "rules," which were given him by the firm he was at work for, which handled thousands and millions of barrels of apples. These rules told him that, in a barrel of No. 1 apples, he must not put an apple of the Northern Spy, Baldwin, Greening, etc., varieties that measured less than 2½ inches in diameter; and he had a piece of board with that size of hole bored in it for a measure; and any apple that would slip through that hole was to be rejected. Then no apple was to go in that had any wormhole or wormy blossom end, or that was knotty, or specked with rot or moth patches, etc. Then from such No. 1 apples he was to sort the largest and most perfect, and place a tier all over the bottom of the barrel, with the stem end down and on this tier pour from a peck to a half-bushel of the same apples he had put stem down. He was then to fill the barrel with No. 1 apples, and, after heading it up, turn it over and write the grade and the variety on the head having the facers immediately under it. Now, I ask the editor, Mr. Snyder, or any one else, if there was any thing dishonest or wrong in this matter? Was not every one of those No. 1 apples just as good as any housewife would ask for? And were not the 2½-inch apples just as valuable, looks excepted, as were the three-inch ones? And the same applies to my XXX honey; and I also claim that there is nothing out of the way, if any one chooses to do so, in shipping cases of honey having XXX facers and XX or X honey inside, *on commission*. Yea, more; I claim that there would be nothing *dishonest* in filling the center of the case with buckwheat honey, the same having XXX white-honey facers, providing it was *shipped on commission*, every case alike, and the producer thought it to his interest to do so. I should doubt the wisdom of such a course, but I can not see that such a thing would be dishonest. But if a customer was told that the honey was such as he sees on the face, all through, and it was sold to him with that understanding, then the thing would be decidedly dishonest. Commission men are supposed to show the goods they have to their customers, by opening a case or two, and the buyer knows what he is purchasing; and, also, the commission man is supposed to sell whatever is shipped him according to his best judgment, to the best advantage of the consignor. It is always well to stop to analyze our thoughts and words before we go off in a tirade of abuse, lest, when they are fully analyzed, we find ourselves open to censure and reproach.

Borodino, N. Y.

[I am sorry to do it, but I am afraid I shall have to confess again that I have never noticed the tendency of the queen at certain times to seek a fresh comb further from the brood-nest; but you may be sure I will be on the watch next season.

Yes, it is indeed true that we each and all are sometimes using some little valuable kink that we ignorantly suppose every one knows of; but in the case of the Morton-Niver method of grading, it would appear as if it were new to many.

With regard to using the "letter X" method of grading, it may be that here is another good idea—perhaps an improvement over the methods that are usually used for designating sections. X is very easily made, and three X's can be made with six strokes of a pencil or pen. The equivalent term, *fancy* (to designate the same grade), takes, as I write it, fifteen strokes. Then the use of a single letter X to designate the third grade of honey does not sound so bad as the ordinary term employed—No. 2 honey. Now, understand I am not advocating that we should make the change — only that the X system has certain advantages worth considering.

With regard to facing crates of honey or barrels of apples, I think it all depends on whether *intentional* deception is used. In the case that Mr. Doolittle mentions, it would appear that the apple-packer had no thought of trying to deceive. At present I do not see any objections to putting up honey in the manner Mr. D. describes. Whenever we buy honey we always judge of a crate by random sections picked out here and there *in the crate*, and never by the facing. The front of the case, as Mr. D. says, will be apt to have the best honey out for display, and not for the purpose of deception.—Ed.]

A. A. M., Pa.—The keeping of bees in garrets has been practiced by bee-keepers for a good many years. As you state, it seems to obviate entirely the trouble of swarming. For full particulars in regard to the method, we would refer you to the department of "Swarming," in our A B C of Bee Culture, under the particular heading of "Bees in a Garret."

MANUM'S EXPERIENCE, NO. 3.

Foul Brood Not Cured by Salicylic Acid; the Starvation Plan a Success.

BY A. E. MANUM.

The season of 1874 was a poor one for honey; but I managed to double my colonies, and by feeding I succeeded in wintering my 60 colonies with the loss of but one. The year 1875 was a good one, and I got something over two tons of comb honey, and I will say that that season was one of the most enjoyable I ever experienced in the apiary, before or since. I left my harness business in charge of one of my men for six weeks, hardly going to the shop during that time. I was too much occupied in the apiary, rearing queens for the purpose of Italianizing my own colonies and those of my neighbors — constructing and experimenting with new hives and other new things. Very many of my new and *great* inventions, however, were consigned to the "dump."

Were I to tell you, Mr. Editor, of all my experiences, both pleasant and sad, I think the story would fill the pages of GLEANINGS for a year. I will, nevertheless, relate one very unfortunate experience that came to my lot at this time.

Just when my enthusiasm was running high, when I seemed to see success floating a fortune within my grasp, here I was with a nice apiary of 120 colonies, nearly all in my improved hive (now known as the Bristol hive); and, as I supposed, all were in prime condition; but, to my surprise and sorrow, I discovered in some of my colonies that terrible and much-dreaded disease "foul brood." It was the latter part of July, 1875, that I suspected my bees were affected with it. I at once visited my friend and adviser, Mr. J. E. Crane, who, after listening to my description of the appearance of my brood-combs, decided that foul brood was in my apiary. Mr. Crane gave me directions how to proceed in order to prevent its spread to healthy colonies, and advised me to destroy all affected ones. This was almost heart-rending; and to think of destroying 25 or 30 colonies was *too much*. I wanted to save the strong colonies. I had an apiary that I was proud of; and to destroy a portion of it seemed more than I could endure. Nevertheless, the next day I hired a man to dig a grave, 12 feet long by 2 wide by 5 deep, in which I buried all the foul-brood combs I could find. Twenty colonies were deprived of their combs, and the combs buried as stated above. The bees were given *new* hives, and allowed to nearly starve (this being just after the close of basswood, and before buckwheat bloom). At the end of three days I fed each colony 1 lb. of sugar syrup. I continued this feeding for about one week, when buckwheat came to my assistance with a bountiful supply of honey; and the way these twenty colonies worked was truly wonderful. This was before the days of comb foundation, hence they were hived with empty frames. In twelve days from the time buckwheat bloomed, Mr. Crane called on me; and on opening some of these hives we found to our surprise that these colonies had not only filled their 12 frames with nice straight combs, but had stored honey enough to winter on. There remained in my apiary but a few colonies that were affected, and those very slightly. But, dear me! before the summer of 1876 was half spent I found myself with over *fifty* diseased colonies. I suppose I spread the disease by changing combs from one hive to another the season before.

During the winter of 1875 I had read of a remedy for foul brood by the use of salicylic acid. I procured 5 oz. of it, at $4.00 per oz.; an atomizer, $3.50; spirits to cut the acid, $3.00, making $26.50 in all. This was used faithfully, according to directions, and with but little effect. I did think that the disease was kept somewhat in check by the use of the acid; but it did not cure in my case. I resorted, therefore, to the old remedy, as practiced the year before, except that this time, instead of burying the combs, I rendered them into wax which I sold for 25 cts. per lb.

The next season, having bought a foundation-mill, I bought the same wax back, for which I paid 32 cts. per lb.

During the season of 1877 I succeeded in ridding my apiary of this dreadful disease, and to this day I have never had any symptoms of foul brood in any of my apiaries.

To be continued.

[Your experience with salicylic acid is exactly ours. It never had any effect whatever in curing the disease, that I could see, and I used it liberally and according to directions; but the starvation-foundation plan worked every time. Knowing now as I do that there is a kind of dead-brood disease that greatly resembles foul brood, and which will usually go off of its own accord, doing but little or no damage, I am inclined to think that the parties who recommended salicylic acid, and claimed it as a specific for foul brood, never had the real foul brood itself, but had this pickle-brood or dead-brood disease that I have been speaking about. As this malady would disappear anyhow, when they gave the salicylic acid and the dead brood disappeared, they naturally jumped to the conclusion that salicylic acid was *the* stuff to cure.—ED.]

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MANUFACTURING SUPPLIES.

It does Not Pay the Average Bee-keeper to Do it, and Why; Importance of Lumber of Exact and Uniform Thickness.

BY G. C. GREINER.

The question, "Does it pay the average bee-keeper to manufacture his own supplies?" comes up occasionally for consideration. As a rule I would emphatically say it does not. In some cases it may seem as though there might be some gain or advantage in dabbling in the supply business; but when you sum it all up, very little is gained by the operation. If the bee-keeper is at the same time a farmer, has a team to keep through the winter, with no steady work for them to do; has on his premises, or near by, pine, basswood, poplar, or other suitable timber for his supplies which he wishes to cut; has sawing and planing facilities at his command, and is somewhat of a mechanical turn of mind, then it may possibly pay to manufacture some of the easier-made articles himself, especially if he has leisure time that otherwise would be wasted. But if he has to buy his lumber, pay for the raw material nearly or quite as much as the supply manufacturer asks for the manufactured article, has to draw it for miles to a saw or planing mill, and then manufacture a greatly inferior article in the end, in my opinion it does not pay him.

As an illustration I will give you a little experience of former years. In the earlier days of our bee-keeping we had to do, outside of our own work, quite a little custom work for our neighbors. We had no planer of our own, but depended on our neighboring planing-mills for that part of the work. In the manufacture of hives it is of great importance, as all bee-keepers probably know, that most of the lumber be dressed to exactly the required thickness. A variation of $\frac{1}{32}$ or even $\frac{1}{64}$ inch will not answer. It must be within a hair's breadth. Being anxious to have our planing done in this manner, we would inquire of the foreman of the mill something like this:

"Can you dress this load of lumber exactly ¾ inch thick?"

"Of course we can, or any thickness you wish," would be the reply.

After running the first board, we would find on examination that it was either too thick or too thin—sometimes $\frac{1}{16}$ out of the way. Then the foreman would change his planer once or more times until he thought the right thickness was obtained. But another examination would reveal the fact that the planer did not dress the two edges alike, or the middle of the board would be thicker than the edges. This, of course, was a serious affair. It could be remedied only by putting the planer in perfect working order; and this, as every one acquainted with machinery knows, is, under the circumstances, a long and particular job. We met the same trouble at all the surrounding mills—never had planing done to our satisfaction; but in working up the material we had to make allowance for their imperfect work.

Now for the comparison. Last spring, after the bee season had fairly opened, I found myself short of some supplies. I needed, among other articles, a lot of supers, which in former years I had manufactured myself; but as conditions were not favorable for making them at that time I ordered them, with the rest of my supplies, of The A. I. Root Co. I hardly need say that every thing arrived in first-class order at the proper time. What interested me the most was their way of dressing lumber. As soon as the packages were opened I took one super side-piece out of the lot, and, with pocket-rule in hand, proceeded to give it a thorough inspection. The result was, measure where I would, on the sides or ends, it measured so nearly ¾ inch, the thickness ordered, that the naked eye could not detect any variation. Not satisfied with that, I then took four pieces of the same kind, laid them on top of one another, and measured again. The result was the same. When squeezed together the four would measure exactly 3 inches. In other directions the same precision was plainly to be noticed—perfect workmanship in every respect. The question, why this difference? is easily answered. All the supply-manufacturer's machinery is calculated for this work; every thing works to perfection. He gets the right kind of material in large lots, cheaper and better than the individual bee-keeper could possibly secure; he has a chance to select from these large quantities whatever he needs for the various purposes to the best advantage; he has practically no waste of material; every thing, even to a little strip ⅛ inch square, is worked up into some salable article. Other advantages could be mentioned, but it is not necessary. If we look the matter squarely in the face, I think it pays about as well to depend on the regular manufacturer for our supplies as to undertake to supply ourselves.

Naples, N. Y.

[No one can appreciate the absolute importance of having lumber of uniform thickness so much as manufacturers of bee-supplies. They have to have special planers and special planer-knife grinders. The great trouble with the average planing-mills is that they allow the knives to become a little hollowing in the center. It makes no difference in their business, because, if their boards are a little thicker in the middle, the house-builder makes no complaint. It is a rule, I think, that the average planing-mill man can not plane boards of an absolute thickness, for the simple reason he has no facilities for doing it; and while we do not claim for ourselves perfection in this particular (as we know the knives do sometimes get a little out on us once in a while), our wood-workers know that, if they allow stuff to go out of our shop, of uneven thickness, they will hear from us in no uncertain sound.—ED.]

CAGING QUEENS A LA DOOLITTLE.

The Plan Not Successful, and Why; Preventing Increase; Queenless Colonies; do they Lack Vim?

BY THOS. W. ODLE.

I was much interested in what Bro. Doolittle says about caging queens, page 16. I have experimented on this line to some extent, and it was any thing but satisfactory. I caged the queens of 30 colonies in cages like Doolittle's, with the stoppers left out, and deposited the cages between the end-bars and comb, on top of bottom-bars, or between two combs of brood. The result was, the bees swarmed out in three or four days after the queen was caged. I would lift the combs and remove the queen-cells, and in a day or two they would come out again, and they continued to do so as long as they had brood from which they could start cells. The result was that they got into such a fever to swarm that work in the sections almost ceased ; and that was not all. The queens were released in from 13 to 15 days ; a large number of them were superseded in a short time ; others I replaced in the fall. Three of those not replaced disappeared during the winter. At that time, 1889, I had 80 colonies ; at present, 83. My loss in wintering during these eight years has been ½ of one per cent.

My way of preventing increase is to remove the queens when they swarm out. I usually put my foot on the queen unless she is an extra good one ; then I set her away on a comb of brood for future use. At the proper time I remove all cells but one, and in about twenty days I have a young laying queen that is worth two old ones.

You say in your footnote, "Queenless colonies lack the vim and energy of queened stocks." They do not in my apiary. They will average more honey for me to the colony, handled as above, than those having their queens in the hive during the entire honey-flow. The past season I hived the swarms from what I supposed to be six of my best colonies on empty frames, and gave them the sections from the old hive. The result was, I had six colonies with queens removed that averaged twice as many finished sections as the hived swarms did, and the hived swarms failed to reach the average of the seventy colonies with queens removed. The advantage of having all young queens, I consider of very much importance.

I notice that Dr. Miller says, in one of his Straws, that his sections averaged ½ oz. heavier in 1896 than in 1897. That is nothing. Mine were 15½ oz. heavier in 1897 than in '96, and there were 4600 more of them, all sold, and they did not go to the city either.

Randolph, Ind.

[Although I know that such good men as Elwood, Doolittle, and scores of others, make the caged-queen plan a success, it has not worked very satisfactorily in our hands. In the first place, it entailed a great deal of work in hunting out the queens, caging them, and subsequently destroying the cells; and then I never could get such colonies to work like those that had queens. They would sulk, and do little or nothing in the supers, while the other stocks were doing a land-office business.—ED.]

A CALIFORNIA BEE-KEEPER'S THANKSGIVING.

BY RAMBLER.

After passing several months on a lone bee-ranch in one of those wild canyons for which California is noted, I began to long for the social features of the home. As Thanksgiving approached I hoped that some kind friend would remember my bachelor condition and give me a social privilege on that time-honored feast day. While entertaining these thoughts it is unnecessary to say that I was delighted to receive an invitation to partake of a Thanksgiving chicken with my bee-keeping friend Geo. K., who lives in the suburbs of that beautiful summerland city, Riverside, Cal.

Mrs. K., dear woman, is an invalid, and many weary days is she confined to her bed. When able to leave the bed Mrs. K. has full charge of the culinary affairs, and, not being able to get away from the immediate vicinity of the house, she takes especial pride in caring for the poultry.

A few spare moments each day are spent in feeding and petting her beautiful Plymouth Rocks. The whole forty-seven had appropriate names, and when their rations were placed before them they expected to eat a portion from the hand of their mistress. But now on this Thanksgiving day Mrs. K. is confined to the bed in the front parlor bedroom; and Mr. K., kind and considerate man, desiring to consult his wife about which chicken should serve for the Thanksgiving honors, proceeded to the hennery, caught a fine fowl and tramped with it across the veranda, through the kitchen, through the dining-room, and into the bed-room. With the merest side glance Mrs. K. recognized her pet chicken bearing the name of Mollie. It had a special endearment from being rescued from a pail of slops after life had become nearly extinct.

"No, dear George," said Mrs. K., with a sigh; "I can not have Mollie killed — poor dear Mollie!"

Mr. K. marched right out and caught another fowl, and again it was across the veranda, through the kitchen, dining-room, parlor, to the bed room.

"Well, how is this for the oven, Mrs. K.?"

"Why, George, that is my best sitting hen. I really believe she would sit for ever if I allowed her to. I have named her Patience, and Patience must not be killed."

Mr. K. not only had Patience in his hands but patience in his heart, and he promptly marched out again bearing a contented smile.

Before he caught another fowl Mr. K. happily thought it would be a good plan to place the hens that had been caught, and put through the salvation process, into a separate pen, muttering to himself meanwhile that he didn't see any difference in the tarnal hens.

Mr. K. then caught the most contemptible-looking hen in the flock. Again he marched across the veranda, etc., and again appeared before the bed; but his coming was heralded this time, for this was a musical hen. Her protesting squalls resounded to every portion of the house; and before he had reached the bedside Mrs. K. shouted, "George! George! that is my dear Gabrielle. She is not pretty, I know, but she keeps the hawks away; she is an immense squaller, and no hawk dares to drop down here for a chicken."

"Well, I should say she did squall," said Mr. K.; "she is rightly named Gabrielle, for she can beat Gabriel's trump out of sight."

S-q-u-a-l-l, s-q-u-a-l-l through the dining-room, veranda; and as Mr. K. was traversing the space between the house and the chicken-inclosure, neighbor W. shouted to him from the road.

"Hello, K.! Can I borrow your wheelbarrow to-morrow?"

Mr. K. put his hand to his ear and shouted, "What d'y say?"

"C-a-n I b-o-r-r-o-w y-o-u-r w-h-e-e-l-b-a-r-r-o-w?"

Mr. K. didn't hear; he lowered his hand, and, with a piston-valve action on Gabrielle's neck, the squalls immediately stopped.

"Now, neighbor W., say that over again."

"Can I borrow your wheelbarrow to-morrow?"

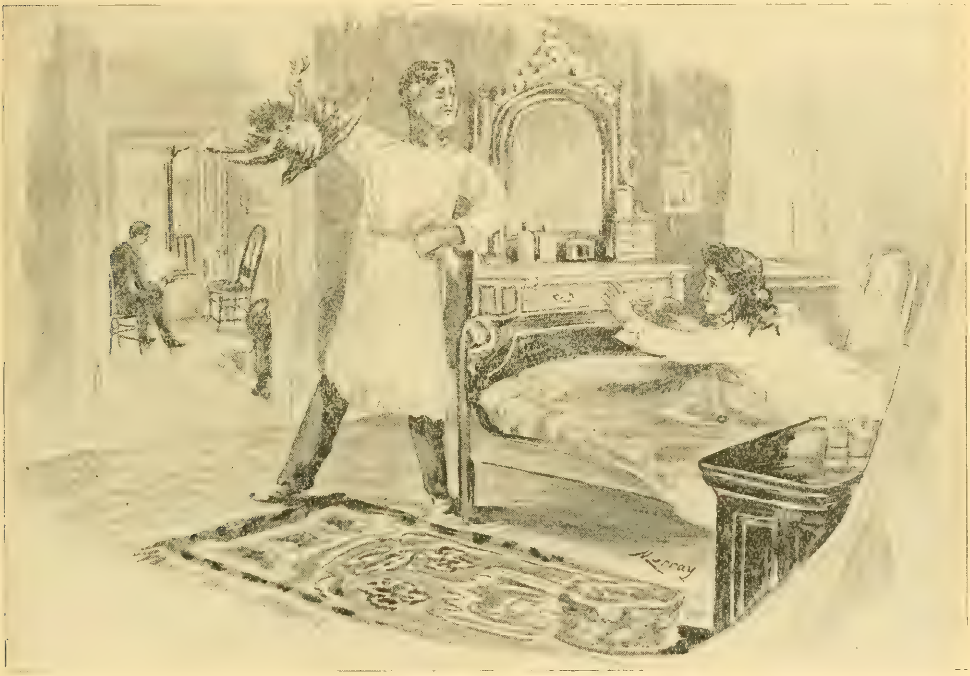
"Yes, if that is all; you see I am very busy; good day."

Mr. K. had a real contented smile while he caught another fowl and took up his line of march to the bedroom; but before he even entered the parlor Mrs. K. shouted, 'George, why, oh! why did you choke poor dear Gabrielle?"

George disappeared again with a contented smile, and grateful for the blessings of good health; but he remarked, as he strode along, that he didn't see but a crick in the back was as mild as a cramp in the leg.

Several more pets were brought in, in rapid succession, the last time a fowl in each hand. They were all choice pets, and must not be sacrificed.

Then there was another parley. "Poor George!" said Mrs K., "I am so sorry for you; why didn't I think of that before?" she suddenly exclaimed, as a new idea came to mind. "There's a hen, George, that I never took much of a fancy to; she has long wattles; and when she runs they go flip-flop, flip-flop."



"NO, GEORGE, YOU MUSTN'T KILL POOR MOLLIE."

But Mr. K. was holding another fowl for Mrs. K.'s inspection. After a moment's contemplation which gave Mr. K. some hopes that he had at last found the acceptable fowl, Mrs. K. smiled and exclaimed, "Why, George, that is Dom Pedro; take him right back; we can not spare him."

Mr. K. about this time felt like holding a parley, and, said he, in a conciliatory tone, "Now, Mrs. K., couldn't you get into this little rocking-chair and let me carry you to the kitchen door, thereby avoiding all of this travel?"

"No, no, George," said Mrs. K., earnestly; "it would strain your arms and back. You know, George, you are subject to cricks; you must be very careful of your health; for if you are sick I don't know what I should do. I am sure you will get the right one next time."

George went out with a more contented smile this time, and a lighter step. This would surely be the last time. To his eyes, all of the hens had long wattles; and when he had trotted them around the yard a few times he found that all of their wattles flip-flopped; but he selected one, and started on his usual journey when one of the hens that he had just chased hopped up on a box, and crowed.

"Well, there! by Jupiter," said Mr. K., with vehemence. He instantly dropped the hen in hand, and, after a little chase, caught the impudent crower, and with quickened pace entered the house; and before he entered the bedroom he shouted, "I have caught her this time, Mrs. K."

"No, no, George! that is not the one I meant; that's Susan B., the strong min—"

"Susan B!" and Mr. K. said it with the

utmost sarcasm; "Susan B! can't help it, Mrs. K.; her head must come off; she crowed, Mrs. K.; I say, she crowed."

"No, George."

"Yes, she did; she crowed; and I say when a female hen usurps the masculine prerogatives of a rooster she must die."

"Dear George, don't get so angry; do spare Susan B.," said Mrs. K., with tears.

"Now, Mrs. K., didn't you say only yesterday, when you saw that woman pass the house in bloomers, and astride a horse, she looked ridiculous, and you wickedly wished that some one would pitch her off the bridge? Now, the woman had some sense."

"Sense! why, George, she hadn't so much sense as that hen! the very idea of sense, and astride a horse! but, George, do spare Susan B."

"But she crowed, Mrs. K.; and my weary legs, and the duty of upholding the prerogatives of the male sex, lead me to say firmly that Susan B. must die," and he left the room in haste; and, though Mrs. K. covered her head with the counterpane, she heard the dull thud of the ax on the chopping-block, and Mrs. K. knew that Susan B.'s head was rolling in the dust.

The fowl was duly scalded; and, while the feathers were being plucked, Mr. K. enjoyed a calm smile; and now and then muttered words would escape from his lips that sounded like "usurped prerogatives."

Mrs. K. soon became reconciled to the fate of Susan B., and gave directions for the stuffing and roasting. At the appointed time two happy bee-keepers sat down to a dainty repast. Mrs. K. became so much interested that she insisted upon being helped to the lounge in the dining-room, and, though not partaking of the good things on the table, she partook of the flow of conversation; and so passed happily our Thanksgiving day.

* * *

ANOTHER GOOD-NATURED GROWL AT THE A. I. ROOT CO.

A Triangular Discussion Regarding the New Things—Fences, Plain Sections, Reversible Bottom-boards, etc.

BY W. B. RANSON.

Dr. C. C. Miller:—I have for years profited by keeping quiet and practicing what other bee-keepers write in the bee-journals, or such of that as seems to be of value to the cause; but now as changes in our fixtures are becoming so great that it is no longer wise to keep silent when the interests of all bee-keepers call us to speak out, I take the liberty to write you this letter.

Well, what about all this changing in supers and sections? Are they any better than what we have had for years? Is the section-holder better than the T super? With us the latter is infinitely better, and will, I think, remain superior to any thing that requires extra pieces of wood between sections and top-bars of brood-frames. Are the tall sections better? If so, why not have them 4¼x5, when we could all use them in our standard 4¼ fixtures by simply placing a ring above to get height of super or cases? But 4x5 or 3⅝x5, or any thing except 4¼, breaks up our whole arrangement. What about all this new slat bottom supers and separators changing? are they any better? Well, for separators I think nothing equals the T super with no slats between sections and top-bars; and with no separators, nothing equals the old-style Heddon case. I run for fancy comb honey, and have on hand now a lot of the whitest, straightest, most uniformly filled sections it was ever my pleasure to see, and I took it off the hives last season in old-style Heddon cases with no separators, and the honey is filled out within ⅛ inch of the edges of the sections, and sells readily here to grocers at 13 cts., and to consumers at 16⅔ cts. per 1-lb. section.

Right here let me say that my bottom-board has much to do with combs being built straight in frames and sections (don't laugh, please), as with it the hives stand absolutely level crosswise and lengthwise, and at the same time the bottom is ¾ inch lower at front end. I use a plain flat bottom, with strips nailed one on each side, one inch square at front end, and 1x¼ in. at back end; stand hive on this, and I have one inch entrance (which I've used for years), the width of hive; and at the rear the frames come within ¼ in. of bottom, inviting the bees to the rear when the frames are in easy reach. Now, with all frames and sections absolutely vertical and plumb, both crosswise and lengthwise, and with proper starters, the sections with me are filled nice and straight every time, without the separators. With the bottom as above, with this very large entrance I use a strip and button, one edge of strip cut out large, the other small entrances. I can reverse 20 of those strips, I think, in the same time it would take Messrs. Root and Danzenbaker to lift off the colony and reverse one bottom-board, and when I would have accomplished the same end; and, besides, I don't have the flanges running past the front end of the hive on each side of the alighting-board so as to prevent me from sliding queen-traps, guards, or strips across the entrances. I tried some that way, but soon leveled the naughty flanges down smooth with the end of the hive. You see those wedge-shaped strips the hive rests on give the fall for water to run off the bottom, give the large entrance, give the bees a chance to climb on the rear end of brood-frames, and the hive also level.

Now, the conclusion I reach from practice is this: The fewer the number of pieces to buy, handle, and clean, the better it is for the bee-keeper; so with the T super and Heddon case; with no separators, and on hives leveled up as aforesaid, and proper starters in sections, I get straight pretty combs and well-filled sections; have no difficulty with crooked combs, and have left out all separators, fences, slat-bottoms, section-holders, etc. Whew! what a pile of stuff left out! and the most important of all is, the bees have a supreme hatred for them, and enter sections more readily without them.

Doctor, you ask about getting bees to clean up unfinished sections. Try placing supers under brood-chambers. I have no trouble that way. It works nicely in early spring to start up brood. I keep over winter quite a lot for that purpose. I have other points, but this is now much longer than I intended.

In closing, let me say that I trust this will not be construed in any sense as being adverse to The A. I. Root Co., for I never had dealings with better people than the Roots, nor have I seen better work than they send out from their factory—it's superb. Their paper also is the cleanest and brightest I read. I wonder if their kind endeavors to give all bee-keepers what they want has caused this fence and section racket—quite likely. If we should pass an occasional letter I will give in detail other points, especially comb honey and swarming.

New River Depot, Va., Jan. 20.

[To the above, Dr. Miller replies:]

Friend Ranson, the matters discussed in your letter are of such general interest that it may be worth while to take the editor of GLEANINGS into our confidence and have a triangular conference—especially as he is largely responsible for the changes that you deprecate. I confess that the matter of making such radical changes is a serious one, to be justified only by something so manifestly better that we can not afford to omit the change. For myself I shall move somewhat cautiously until satisfied that I should gain enough by the change to recoup me for my loss in throwing away my present stock of supers to the value of $250.

But don't you think that you are a little unreasonable yourself? Evidently you are inclined to the belief that we should hold on to our old fixtures, and yet in the same breath you speak of changes that you have yourself made, and quite plainly you think that others should make the same changes you have done. So that you are not so much averse to change, providing the change is one that suits *you*. Let me tell you wherein I think you are bad. You've been going on all these years using what you thought was a good thing, keeping it all to yourself, until some one tries to reach the same thing in another way; and then, after some have been to the trouble and expense of making the change, you are ready to say what you ought to have said long ago. But perhaps we'd better not quarrel about that now.

You ask whether the section-holder was any better than the T super. That depends upon who answers the question. The editor and I are not on speaking terms on that question. He thinks the section-holders better, and wonders why I can't see it. With my knowledge and management of T supers and section-holders, I am very, very sure that the T supers are far and away ahead. And yet it is possible that, if I knew as much as he about the section-holders and their management, I might prefer them. And it is just as possible that, if he knew as well as I how to manage T supers, he might experience a change of mind. I suspect that he thinks I stand almost alone in preferring T supers. Others, like yourself, go on using them without saying any thing, so he doesn't know about them. In some respects you are wise in keeping quiet.

I don't know enough to answer your question as to whether the tall sections are better. I can hardly say that they look any better to me. But here come witnesses who say they have been using them, and they like them, and, what is more emphatically to the point, they say they can sell them better, and some, at least, say they sell them for a higher price. If only one man said so, or if the followers of one man said so, it might not deserve very much notice; but the use of tall sections seems to have originated independently in more than one place, and all give the same sort of testimony. If any one has tried the tall sections, and has not found them good, he has at least kept very quiet about it. If they are undeniably an improvement, and are to come into use, it seems a fair question to ask, "Why not give a chance for them in T supers?" Possibly the editor thinks the number of T-super men so small it isn't worth while. (Between you and me I suspect that there are three or four times as many super adherents as he supposes.) But before we come down on him too hard, we'd better first find out whether he will refuse to grant what we ask. For we must remember that the chief business of supply-manufacturers is to supply demand. Can we agree upon what we want? If we have a section 5x4¼x1⅞ it would be too heavy. How would 5x4¼x1⅝ do? That would give us a section very nearly the same weight as a section 4¼x4¼x1⅞.

Your bottom-board has something in it decidedly good; and the fact that the same idea has been quietly used in more than one quarter with great satisfaction for years says much in its favor. It does seem boiled-down nonsense to give the whole hive a forward pitch just for the sake of having the same pitch for the bottom-board or floor, when the floor can have its own pitch independently, and leave the hive level, not only from side to side, but from front to rear. Then, too, it gives us the advantage that may be of real value that the bees are forced to make their way up the sides and rear on their way to the supers. By all means let us have the hive level. It certainly seems that we can have truer combs than with a slanting hive.

If a perfectly level hive will do away with the necessity for fences and separators of all kinds, then that's a fourfold reason for level hives. But that seems almost too much to believe. Do you mean to say that, without separators, every one of your sections is built true with no hollowing or bulging? If you lay a rule across the sections, are there no cases in which the rule would touch the comb? Or do you merely mean that they will do for a home market, with a chance to get rid of bulgers without any careful packing? What makes me just a little more careful in inquiring about this is that, years ago, it was claimed that, with Heddon supers, no separators were needed. But others who tried the same thing found that separators were needed, and gradually it has settled down almost into an axiom, that, for good shipping, it is impossible to get along without separators; and the supposition is that those who thought separators were not needed were more easily satisfied than they ought to have been with their sections.

The practice of slanting hives forward is so almost universal that probably not a great many could give testimony as to whether separators are needed with level hives. If any have had experience in that direction it is to be hoped that they will give it, no matter on which side. Certainly if we can get along without separators it will be a great gain.

I have tried your plan of putting sections under brood-chamber in spring to have them emptied—put hundreds of them under—but it didn't work well with me. The bees didn't empty them up promptly, as I expected, but very slowly; and by the time they were emptied they were darkened and utterly unfit to use. Your management may have been different. C. C. MILLER.

Marengo, Ill.

[I admire the frankness of friend Ranson, and I am glad he has spoken just exactly as he feels. To start with, I can simmer the whole matter down in a nutshell, by saying what we all three know to be true, that it is not possible to please every one. Friend R. and Dr. Miller think there is nothing better than the T super; and I am well aware that there are many other good bee-keepers who think the same thing. If I am correct, the most extensive bee-keeper in the world, Capt. Hetherington, uses the T super; and there are other prominent bee-keepers, such as A. E. Manum and Hon. Geo. E. Hilton, who could not be persuaded to use any thing else. On the other hand, there are others who think the T super is simply intolerable, in evidence of which I would refer to S. A. Niver's article in our issue for Feb. 1, page 81.

Our position as supply-dealers and manufacturers is to furnish what bee-keepers call for, and at the same time suggest and introduce improvements that, in our judgment, will be a benefit to the industry as a whole.

Do not misunderstand us, friend R. When we introduced the fence we did not expect nor do we now advise bee-keepers to discard their old supers; but if the plain section has merits, it is perfectly evident (if one will follow carefully the printed matter that has been put out in regard to them) that it can be used in the old-style supers; and there are special fences made to fit these old T supers, old section-holders in old supers. Assuming that sections have to be bought every year, the bee-keeper loses nothing by substituting plain sections in place of the old-style bee-ways; and the only added expense is for fences to take the place of old separators which, if made of a thin slice of wood, are probably ready for the kindling-pile if they are ready for any thing.

A part of the expense of the fence can be offset by the saving effected in shipping-cases.

With regard to the tall section, Dr. Miller has covered that point. In addition, I might say we did not introduce the 4x5 for the fun of it, but because we knew we were losing a large trade from some bee-keepers who were actually making their own goods, so as to get what they wanted.

Yes, friend R., a 5x4¼ section can be used in old-style supers and section-holders by putting on a rim to make up the extra depth; but it is apparent these 5x4¼ will hold more than a pound, unless made so thin as to render old section-holders useless, and there, you see, you would be running into the very snag you would have us avoid. We adopted tall sections (3⅝x5) that could be used in the ordinary eight-frame super by simply adding on a rim and plain slats to support them. The width of 3⅝x5 was fixed upon because 5 such sections would just fill out the space in the length of an eight frame super, such as thousands of bee-keepers are now using; and as there is a great demand for sections holding from 12 to 14 ounces of honey, this style of section will fill the bill for a tall section. It is very near the size used by Mr. Morton and Mr. Doolittle. The 4x5 is the same thing as the section used by Capt. Hetherington (3⅞x5), with the exception that we employ even inches; and these even inches make the section hold an even pound. There are some who want a section that will average as nearly a pound as possible, and this 4x5 fills the bill.

I doubt very much whether the average bee-keeper could dispense with separators, even if he did level up his hives. I say "average," because I know the general run of them secure honey that is bulged and uncratable. Several times we have come near deciding that we would absolutely refuse to buy honey unless it had been produced with separators. Now, I am not saying that friend Ranson or anybody else can not produce cratable honey, but a device or system that will work for one might be very unsatisfactory for the masses. For this reason, as Dr. Miller has well said, the Heddon non-separator case did not prove to be popular, and I know it was used by some who were expert bee-keepers.

With regard to giving better ventilation by the construction of the bottom-board at the entrance, there might be a difference of opinion as to which would be quicker—the manipulation of a reversible bottom-board or a series of movable slats. We selected the Danzenbaker reversible, not that we ourselves would necessarily use it one way at one time of the year and one way at another time, but because we wanted one that could be adapted to the diverse notions of two classes of bee-keepers—one class who insist that the bottom-bars of the frames must come within ⅜ inch of the floor of the hive; and the other class who want plenty of ventilation and a large entrance.

I am glad this whole question has come up, because, when GLEANINGS gets to a point where it will not print or will not listen to the "other side," then it will cease to be serving its real purpose. There is at least one point upon which we perhaps all agree, and that is on the value of deep and large entrances. Perhaps friend R. will tell us why the deep entrance is better than the shallow one.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

A WORD FROM ONE OF THOSE DESPISED FARMER BEE-KEEPERS.

Mr. Editor, and professional bee-men, please don't throw a club at me, but allow me to intrude my visage into your mystic circle long enough to ask a question or two. The reason I am ready to dodge a club is because of the fact that I am one of those farmer bee-keepers I see so much written about that is not to their credit, so I do not like to speak in your presence. The same thing kept me from knocking at the door of the U. S. Bee-keepers' Union for admittance last fall when I was at the Buffalo convention. I had read so much in opposition to the "farmer bee-keeper" that I was afraid to declare myself for fear of being "blackballed."

The reason I wish to enter now among the writers of GLEANINGS is because I want to ask a question or two. I use the Dovetailed hive, with section-holders and scolloped separators. I was bothered last year by the section-holders sagging so much that they rested in the middle on top of the frames. I think I will lay a quarter-inch strip, this year, crosswise of the middle of the frames, unless you will kindly tell me a better way.

Another thing that bothered me was this: Right where the scollops were in the separators, the honey would be bulged out under the scolloped place, and be joined to the next section of honey, many times, and nearly all were bulged far enough to make them very bad to set in the "no-drip" shipping-cases. From the pictures I see in GLEANINGS, of sections of honey, I do not think others are bothered this way. How do you prevent it?

EDWIN BENNETT.

Malloy, Ia., Feb. 8, 1898.

[It is not I who would throw a club at the farmer bee-keeper; it certainly is not E. T. Abbott, of the *Busy Bee;* but it is the "other fellow;" but if you are not one of the naughty ones who put out poor comb honey and demoralize prices, here is my hand.

Now in regard to your questions: Two or three years ago, when we made our section-holder bottoms thinner than now, we had some reports where they sagged when loaded with honey; but I do not remember of noticing any since we made them thicker. Possibly you had the thinner bars. That other condition, where you speak of the honey being bulged under the scollops of the separator, seems to me is very unusual. I can not understand why it should happen unless you permit the bees to become crowded for room. The professional bee-keeper knows that it is bad policy to let the bees become cramped for storage room, and he accordingly gives the bees another super before the one below is entirely filled. If, however, it is toward the close of the honey season, he lets the super stand just as it is, without extra room above or below.—ED.

THE TALL AND SQUARE SECTION; POUND AND LIGHT WEIGHT; AN INTERESTING COMPARISON.

I am a bee-keeper in a small way, and sell my honey at retail in our city market. A grocer, whose store is close to my stand, this last fall received honey from somebody in tall sections, plain, which held from ten to twelve ounces, and I think they were either 1¼ or 1⅜ thick. He retailed them at 10 and 12 cents each, thus realizing 16 cents a pound. My honey ran 15 to 16 ounces, and I sold at 16 cents a pound also, which made 15 and 16 cents a section. The result was that his honey went off rapidly and mine dragged. If I called attention to the difference in weight it made no difference — they bought the other man's honey anyhow.

Now, I want to buy ten more hives this season, and want to use the plain section and fence separator, and I should like to use a tall section that will hold, when nicely full, 10 or 12 ounces. Will your tall section, 3⅝ x 5 x 1¼ or 1⅜, give this result, and will they fill the super for the eight-frame hive all right? and will the bees make that thickness of comb as well as in the 1½-inch thick?

Williamsport, Pa. THOS. V. B. NEECE.

[As I read this over I "smoled a smile," for my thoughts turned toward Dr. Miller, who is ready to fight whenever I broach this subject. Say, doctor, hit Mr. N. this time. His would-be customers evidently bought the tall section because it looked pretty, and because it cost only 10 cents.

I found this condition to exist in many localities that I visited; and it is true in other places that you may tell the consumer as often as you like that the ten-cent section of honey does not hold a full pound, he will buy it just the same. It is the price and not the avoirdupoise that has to do with the matter. On the other hand, I am perfectly willing to acknowledge that in some localities they will not buy a box of honey unless it holds approximately a pound. For instance, a customer will come in and say:

"How much are those boxes of honey?"

"From ten to twelve cents," is the reply.

"Do they hold a pound?"

"No, only about twelve ounces."

If there is a pound box to be had he will buy it in preference to the light weight.

Now, it seems to me the whole point is not a question of honesty, but simply one of selling that which sells best. If consumers demand pound weights, give it them. If they pay ten and twelve cents more readily, give them light-weight boxes. In short, let the market decide the weight and shape of the section.—ED.]

P. L. D., West Indies.—We know of no way that you can protect wood from the ants in your climate unless the parts that come in contact with the ground are smeared with coal tar, coal oil, or carbolic acid. The first named is, however, much the best. We have recommended this often, and, so far as we know, it accomplishes the result desired.

EDITORIAL BY E. R. ROOT

IN the January *Review* Mr. Hutchinson said he could not understand why more perfect combs should be built in plain sections, and that he was satisfied that some factor had something to do with it. He is now (according to the February *Review*) of the opinion that "well-filled sections come from freer communication that is brought in when the plain sections are used." This I believe is the secret of it.

THE NATIONAL BEE-KEEPERS' UNION ; OFFICERS FOR 1898.

THE result of the election, as reported by the committee appointed by the Advisory Board to count the ballots cast for the various candidates, shows that all the old officers were reëlected. The list stands as follows ; General Manager, Thos. G. Newman ; President, R. L. Taylor ; Vice-presidents, G. M. Doolittle, Dr. C. C. Miller, Prof. A. J. Cook, Eugene Secor, and A. I. Root.

OMAHA FOR THE NEXT MEETING OF THE U. S. B. K. U.

THE editor of the *Busy Bee*, who visited Omaha recently in the interest of the Missouri bee-keepers' exhibit at the Trans-Mississippi Exposition, says, "This exposition bids fair to rival the World's Fair in many respects. It is bound to bring together people from every point of the continent, and it seems to me it would be a great mistake not to hold the next meeting of the U. S. Bee-keepers' Union at Omaha during the exposition, which opens June 1st and closes Nov. 1st. What do the members of the Executive Committee say to this? The matter should be settled at once."

Although not a member of that committee, I for one would be most heartily in favor of having the Union meet at Omaha. In fact, it seems to me it is the place above all others for 1898. Hurrah for Omaha!

T. S. FORD AND BEE-PARALYSIS.

WE have only just learned that our old friend and correspondent, formerly of Scranton, Miss., died in November last. Mr. Ford had probably had more experience with bee-paralysis than any other man, and his valued contributions in relation to this disease have appeared from time to time in our columns. He had tried all known remedies; had experimented with it—in fact, had his apiary well nigh wiped out two or three times by the disease. His last conclusions, if I remember, were that there is no known cure. He said it would disappear, apparently, of its own accord; and then when he *thought* it had gone for good it would reappear in all its virulence. Such was the peculiar nature of the disease. Mr. Ford had intended to experiment further; but death, it seems, has cut short his work. Mr. Ford was an attorney at law—a bright, practical writer and keen observer, and by his death our fraternity has lost a valued man.

ENCOURAGEMENT OR FLATTERY.

MR. HUTCHINSON does not believe in the sentiment that "praise to the face is an open disgrace." Among other things that he says, and which I indorse heartily, is this :

> When a man dies we forget his faults and remember his virtues, and cover his coffin with flowers. Let us not withhold our flowers and appreciative words until eyes and ears have passed beyond rejoicing.

There is such a thing as bestowing flattery, and there is such a thing as giving needed encouragement when work is well done. The manufacturer knows it is to his interest to praise his men occasionally when they do well. Whenever I hear a good sermon I feel like getting hold of the preacher's hand and telling him so, because I want more sermons like them. In the same way, I know of no reason why the subscribers to a periodical should not encourage an editor whose work is meritorious.

I am not saying this to court praise for myself, even if I deserved it, but as a reason *why* I have taken occasion to speak a good word for the work of my co-laborers in the field of apicultural journalism.

NEW LIFE IN BEE-JOURNALS.

APPARENTLY all the bee-journals have turned over a new leaf for 1898, or rather, perhaps I should say, they are putting new life and energy into their columns. I have already referred to the *Review* and the *American Bee Journal*. Among the others that have taken on a new lease of energy is the progressive *Progressive Bee-keeper* and the *American Bee-keeper*. The first named is now having a series of articles by one of our correspondents, Mr. R. C. Aikin. These articles are reviewed and commented on by G. M. Doolittle ; and the two together, in the same issue, make quite racy reading. Somnambulist, as of old, is as bright and spicy as ever ; and in the editorial departments Bro. Leahy and Bro. Doolittle make things interesting. The *American Bee-keeper* now has for its editor Mr. H. E. Hill. Whether this is the same Hill who was formerly in Florida, and moved to Pennsylvania, or some other Hill, I can not say ; but he is evidently a practical bee-keeper, if I may judge by the editorials over his name. All together the journal seems to have taken on new life and energy. We wish our cotemporaries success and big fat subscription-lists.

THE BLACK RACE CHAMPIONED.

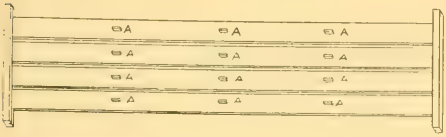
J. E. CRANE, in the *Bee-keepers' Review*, comes out as a "fair-minded champion of the dark race" of bees. He has experimented for some thirty years with blacks and Italians, and in some instances, at least, he finds that the former fill their hives better, and give more surplus, than the latter ; and in one instance in particular, although he had robbed his black colonies of a large amount of brood to help along the weaker Italian colonies, it was these same blacks, much to his surprise, that gave him more finished sections than he had ever taken from a colony of pure Italians.

He admits that the yellow bees will secure more light honey, and honey of better quality. But in localities where the honey is dark, or when the season is of such a character as to afford only the dark, the blacks were ahead.

In my travels among bee-keepers I found that the blacks or hybrids are generally used, not because they are cheaper or easier to breed, but because from the hybrids, at least, more honey is obtained; and what honey is secured, if in the comb, is whiter. When I called upon Mr. Elwood I thought he had about the meanest bees (hybrids and blacks) to sting of any bees I had ever *felt*. But talking about mean bees, I shall have to award the palm to Mr. Coggshall, whose bees I have written up in another column. In our locality, where it is almost exclusively light honey if any, I am sure the Italians give us the best results, or at least the yellow hybrids.

THE J. E. CRANE FENCE.

SOME two months ago Mr. J. E. Crane, of Middlebury, Vt., sent us a sample of a style of fence that he thought might have some merit. The cut below illustrates it.



Mr. Crane believes most heartily in the idea that freer communications from side to side causes better-filled sections; and while the fence that we are making is a good move in that direction, he would go a little further and make it possible for the bees to go *straight across*. To do this he drives wooden pegs about ⅛ inch thick, ¼ inch wide and $\frac{5}{12}$ long through the slats, at the right intervals to abut against the uprights of the sections. There is no question but this fence would give freer communication; but the chief objection to it is that it is rather flimsy, the slats being held *only at the ends*. Mr. L. A. Aspinwall secures, in effect, the same result by the use of tin separators with transverse slots opposite the uprights of the sections, with little cleats above and below the slots to bee-space the separator from the edges or corners of the plain section.

All of these things are worthy of our careful consideration. If the regular fence that we have adopted will secure as good results as the Aspinwall or Crane separator, it will have the advantage of being cheaper, and, to my notion, much stronger. Let the brethren test these ideas thoroughly. In closing, let me say I am of the opinion that Mr. Crane is considering the matter of having his fence patented. And it may be that it would be well worthy of a patent.

HOW THE PLAIN SECTION BRINGS ABOUT NEW CONDITIONS.

MR. ASPINWALL, in the *Bee-keepers' Review*, has another interesting article on the use of plain sections. In speaking of them he says:

> Furthermore, greater care must be exercised in handling and crating. If any sections with bulged edges are found, only one or two, at most, should be put into a case. If placed near the center no abrasion of the cappings need occur when removing them, the first row being the most difficult to remove.
>
> I fear we shall have some complaints in the matter of bulged edges the coming season, especially where imperfectly constructed separators are used.
>
> The plain section will undoubtedly necessitate some changes in shipping-cases. Each section getting closely against the adjoining ones will prevent much if not all drip below, which may possibly prove objectionable, as the honey would be likely to run through an entire row in the event of a single breakage. Even with veneering or heavy paper separators, each one would be swamped in its own leakage. But the plain section, with its many points of excellence, will more than balance the slight objections presented. With well-filled sections and proper handling, no serious breakage need occur. However, I expect to use less expensive cases another season by leaving out the supporting cleats and paper, as well as making other slight changes. In the mean time I trust our supply-manufacturers will anticipate all these things. In a letter from Mr. F. L. Thompson, my attention was called to this requirement. In consideration of low prices, we must have cheaper shipping-cases.

I do believe it is true that the plain section will make it possible to make a cheaper shipping-case than the old-style bee-way, or sections with "ears" on them. But this is a matter that we can all experiment on during the coming season. It is undeniable that the retail and wholesale price of comb honey has been coming down; so also has been the price of supplies. But, if necessary, shipping-cases might be made cheaper still, providing bee-keepers would be content with something less expensive.

THE PLAIN SECTION IN CALIFORNIA; AND THE VALUE OF LARGE HIVES IN CALIFORNIA.

THERE are a good many interesting things that I glean from the report of the California State convention, as published in the *American Bee Journal*. Among others I notice that the plain section was favorably mentioned. Some were exhibited by Geo. W. Brodbeck, who pointed out the fact that they appeared better filled, and that more of them could be packed in a case. Mr. M. H. Mendleson had used the Danzenbaker section, and had had such excellent success in producing first-class honey that he proposed to use them exclusively in the future.

But the part of the report that interested me more particularly was that regarding the best bee-hive. There are only a few lines, comparatively, relating to this discussion; but, if I read correctly between the lines, there was a good deal more said on the subject, and I therefore wish I could have heard the whole in convention. Mr. McIntyre had used ten-frame hives, but had recently introduced into his apiary 60 twelve-framers, and prefers them to the tens. This preference is based on the fact that, when this twelve-frame width is used three stories high, it will have a "tendency to give the queen the highest capacity for brood-rearing, and for the prevention of swarming."

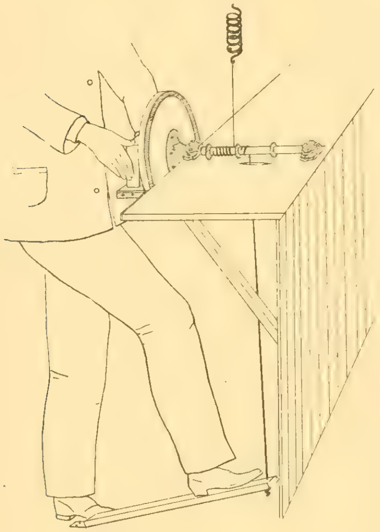
A twelve-framer three stories high! Whew-ation! I should think it *would* have a tendency to accomplish the result stated. As our readers know, my experience seems to show that the two and three story colonies give the best results in honey, and manifest the least disposition to swarm. About all the swarming we had at our out-yard last season was from the single-story colonies. The double and triple deckers kept right on minding their business. Perhaps you add, "How do you know they did not swarm?" In the first place, I visited them often; and if there had been any considerable reduction in strength in any of these colonies, I am quite certain I should have known it. In the second place, the wings of the queens were clipped, or, if not clipped, perforated zinc was placed over the entrance. As the original queens were with the big colonies at the close of the season, I am positive they did not swarm.

I may be mistaken, but it seems to me that the best solution of non-swarming at out-yards is rousing big colonies and unlimited room for the queen to lay in the brood-combs.

But in order to get *comb honey* we shall have to unlearn some of our old notions, and adapt ourselves to new ones, I suspect. I should very much like to hear from those who have had experience "along these lines," as Doolittle would say.

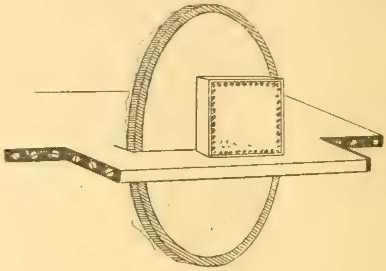
THE SEE-SAW SECTION-CLEANER.

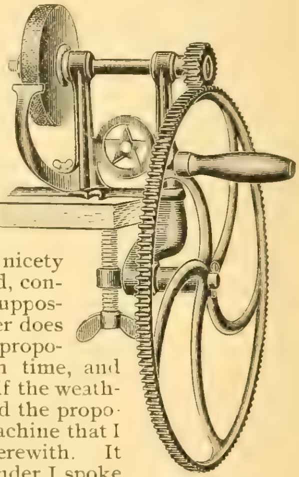
ON page 100 I said that I had a machine (in my head) that embodied all the good points of the other machines illustrated in our columns, and that (in my head) it would clean faster and better than either. Our departments have been so very much rushed with orders for regular goods that our men have not found time to carry out my idea, but I finally had our artist put it on paper, and here it is.



It is almost self-explanatory. A shaft is mounted in two boxes, and on the end of the shaft is a flange. To this flange is secured a wooden wheel. On the face of the wheel is a circular piece of sandpaper held in position by an iron band that binds the sandpaper around the periphery of the wheel. The view at the top of the next column shows the section just before the sand-wheel, and also how the sandpaper is secured by the band.

As the usual forms of foot power of continuous motion are somewhat expensive, I make use of the principle adopted by our forefathers in their old-fashioned turning-lathes. A spiral spring is attached to the ceiling overhead. To this is attached a stout cord which winds around the shaft of the mandrel a few times. Another cord, running spirally around the shaft in the opposite direction, is attached to a foot lever. The pressure of the foot unwinds one cord and winds up the other, causing rapid rotation back and forth. The method of operation is simply to put the section against the wheel as the disk revolves one way and the other. The thought occurred to me that this reciprocal motion would permit the propolis to get out of the way better than if the wheel revolved in one direction only.





Later.—Since writing the preceding lines I have been trying a *continuously* revolving disk, somewhat on the plan of the one shown above. I was agreeably surprised, both at the rapidity and nicety of the work; and, contrary to what I supposed, the sandpaper does not fill up with propolis. It might in time, and probably would if the weather were warm and the propolis soft. The machine that I tried is shown herewith. It is the emery grinder I spoke of in our last issue, and which I thought, by a slight change, would make a section-cleaner for a small amount of money. In the test above mentioned we removed the emery wheel and in its place put a wooden wheel of larger diameter, and thick enough so the nut would be below the surface of the wheel. Over the face was stretched sandpaper.

In the test I used the dirtiest sections we could find, smeared with propolis, and badly stained. It removed both the propolis and the *stain*, and will beat hand scraping with a knife two to one. What is of importance is, it does the work so much more thoroughly. For prices, see Special Notices.

NOTES OF TRAVEL

BY A. I. ROOT.

Feb. 12.—The fog, mentioned in my last, delayed the starting of the steamer, and also cut off the view when it did start, so that I got only a glimpse of the top of the Goddess of Liberty, that colossal statue from Bartholdi, and I also missed the sights all the way out of New York harbor. Mrs. Root has objected to the location of our home because we are so near two railways that the whistling keeps her awake nights. I wonder what she would think if she could hear the chorus of whistles, fog-horns, and bells from the craft of all sorts that were swamped in that fog. It was a perfect Babel, or bedlam of unearthly noises and shrieks While we skewed our eyes in the direction the strange sounds seemed to come from, the mist would occasionally lift a little, and a dim phantom of something that might be another steamer loomed up right in our track. It was like jostling through the crowd on Broadway, only it was great boats and ships that jostled instead of people. Thus we worked along until opposite Coney Island, then the pilot said he *must* see the landmarks or the boat would run out of the channel and get stuck in the mud. There was nothing to do but to stand still and wait for the fog to lift. Toward night we got out around Sandy Hook, and for the first time in my life I was on the great ocean, out of sight of land.

One after another began to get seasick; but I was all right until after dark, and even then I stayed out in the air as most advised, until, chilled and dizzy, I sought my berth. Sleep, in much mercy, came soon, and at dawn I was rejoicing, and up and dressed to see the sun rise out of the water. My rejoicing didn't last long; neither was I *happy* when the sun rose. I talked with other sufferers, and we tried all sorts of plans. When it seemed as if I could *not* stand the anguish, I wiped my weeping eyes (and mouth), and my little prayer, "Lord, help," burst forth almost of itself. I remember feeling my utter helplessness as well as my insignificance as a mere speck in that wide watery expanse of sea and sky. I tried to be brave, and to bear it as thousands of others have had to bear it; but I was completely vanquished, and wept like a little child amid the war of the elements. Then I remembered, and clung to it as a ray of hope, "Even the very hairs of your head are all numbered," and the cheering words that follow. Something suggested that I go back to my berth. I crawled in as best I could, and, after lying still a moment, memory or something else brought vividly to mind the words, "Be still, and know that I am God." Most gladly did I heed the voice, and very soon my suffering gave place to joy and praise to God. I soon made a discovery. So long as I kept my head down as low as the rest of my body, and kept perfectly still, I was in comparative peace. Dear reader, I kept right there all that day and nearly all of the next; and instead of being miserable I was quite happy. I felt a kind of trust and peace I had not known before. A disjointed fragment or two fragments of a hymn expressed better than any thing else what I felt:

> My Savior comes and walks with me,
> And sweet communion here have we;
> He gently leads me by the hand;
> And all my night has passed away.

The last line didn't rhyme, it is true; but the sentiment did just then exactly. The steward and room-mate were exceedingly kind. As we neared Bermuda the steward brought me everything the steamer afforded, and declared he was paid to make it his business to do all in their power for seasick passengers. Out of 205, perhaps 25 or 30 were as badly off as myself. In my case, if I even tried to prop myself up with pillows the sickness came back. I could not even read, most of the time; I could not swallow any food—not even a cup of tea. It seemed to be God's will that I should be *still*, and rest; and I enjoyed obeying, to the very letter. All the winter I have been unable to bear any kind of chilly wind; but I soon found I could open the window in my berth, lie right in a strong breeze, even in my shirt-sleeves, without taking any cold at all. From this it seems we have another proof that exposure to a draft need not cause one to take cold, if the stomach and digestive apparatus are in good order. A doctor in Portland, Oregon, once told me if I would go out on the ocean and get thoroughly seasick it would do me more permanent good than any medicine. Is not seasickness one of *Nature's* remedies?

I did not know we were nearing Bermuda until I saw floating seaweed out of my narrow window. When we got into calm water I arose and found I could stand and walk with a clear head but rather feeble knees. The sight of Bermuda somehow linked itself with "Beulah Land;" and now as I write, after having spent one day in rambling over it with my wheel, in company with my good friend W. K. Morrison, I still cling to the illusion.

The dainty gardens scattered here and there wherever enough fertile soil can be found between the rocks are all my imagination had pictured them. The colored people who tend them are unusually intelligent everywhere, and seem very happy in their neat white houses made of the coral rock. The houses are all stone, and all of this one kind of stone, *roof and all*. Then they are all whitewashed regularly, roof and all. A frost is never known here. The whitewash never comes off. I have made several discoveries already. All the water used here is rain water. It falls on the whitewashed stone roof. The cisterns are all of this same stone, and whitewashed with Portland cement.* The water is remarkably pure, and always contains a trace of limewater from the whitewashed roofs. Babies are often given limewater for sour stomach. Babies and everybody else have it here — the faint trace of lime in the drinking-water, and *not* the sour stomach. See?

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*When we first came near the island I noticed what I called fields of some crop covered with canvas; but as frosts are unknown here, neither I nor any on the steamer could imagine what they were for. Mr. Morrison explains that near the military buildings, where they need more rain water than falls from the roofs, they smooth off the coral rock on an incline, then whitewash it so as to be impervious to rain, then catch the water as from a roof, conduct into stone tanks, and thus have a supply. The large hotels have a similar arrangement.

The coral roads for wheel-riding, curving gracefully in and among the gardens, up and down just enough for nice riding, are beyond any thing I can describe. The songs of the birds, the gorgeous flowers, beyond any thing I supposed the world contained — is that last too strong? Well, friend M. showed me one plant this afternoon that *is* finer than any thing I ever expected to find on the whole earth. It is called a "Bouganvilla." It was spreading over a veranda, and the masses of bloom were of such startling and *entrancing* brilliancy as to hold one's gaze when his eye caught on to it a quarter of a mile away. This mass of bloom from the *one plant* would almost make a load for a common hay-rack.

One thing more: All the onions grown in Bermuda are transplanted on the plan of the "new onion culture," and have been for ages past. They never raise them in any other way. Strawberries are only(?) 60 cts. a quart, and they can be grown nine months in the year.

Most of the people here attend church, and there is very little sabbath-breaking unless it is by rich people who come here from New York. We are a mile from town, among the gardens This place is called "Sunnyside." On the hill above is "Sunny Land;" and over further is "Happy Valley." The name is right, for there are more happy hills and valleys here than anywhere else in the world, I do believe; and one reason is that the people are almost all colored. They are fairly well educated, nearly all Christians, and have pretty homes, and are all hard-working people, or nearly all. They are protected and respected by Queen Victoria, and seem in many respects very much different from the colored people in America. A good many of the gardeners are Portuguese, and a bright little Portuguese girl is chattering to me now, and showing me the presents she got at school. This is a new world, full of strange things. The most beautiful and luscious muskmelon I ever tasted grew on a *tree* in the yard, and the tree is full of them, from little green ones to big ripe yellow ones, and this right in winter time too. There is very little wood here, so the houses are all made of stone, and the fences too. The houses and fences are as white as clean white sheets on washing-days. Nobody here ever saw any frost, snow, or ice. Nobody need lock the doors nights here, as stealing is so rare. There is almost no crime, for the culprit could not get off the island, neither could he hide where the Queen's soldiers could not find him. Nearly all the intemperance is among the rich people who come from New York.

To my Sunday-school class:

Sunnyland, Bermuda, Feb. 14, 1898.

Dear Boys:—I shall give you only a brief sketch this morning of the wonderful things in this land of perpetual summer. The houses here have no chimneys. The cooking is all done on oil-stoves. The fences are all coral rock, and one could almost run a wheel on top of many of them. When the dog runs out to bark at people he goes along the top of the fence. The trees, grass, flowers, and every thing, are all unlike Medina. Oleander-trees grow wild everywhere; and the finest melon I ever ate was picked from a tree, and there were great clusters of green and ripe melons left on the tree. There are many fruits I never saw or heard of before. I have not yet tasted them all. I picked out four limes (a kind of lemon) at a fruit-stand, and held out some money (for I have not yet learned the names of all the coins), and the man said a penny (a big cent) was the price. Just think —*four* lemons for a cent! The money here is half-pennies, pennies, twopence, threepence (silver), sixpence, and shilling. A shilling is about like our quarter.

Last Saturday we went out several miles on our wheels, and came to a place called "Devil's Hole." I don't like the name, but my companion said we were to stop there. It was a sort of rocky inclosure, and over the gate it read, "Admittance one shilling." Inside were three little ponds of water—one very shallow, with the bottom white sand. In this one were the "angel fish," perhaps the handsomest living thing in the whole round of living and moving creation. Imagine the most beautiful goldfish, with glittering penciled scales, and of almost all the tints of the rainbow. As if this were not enough, God has given the beautiful creature long flowing fins, like unto angels' wings (or what they are supposed to be like), and then added to all a grace of motion that can not well be described. These fish won't live in aquariums, they say, so they can be seen only here. What a contrast, to think of finding *such* a creature in "Devil's Hole"! But right in with the angel fish is an octopus, a hideous creature with long sprawling arms or feelers (tentacles), and with an evil, vindictive-looking eye that might well give the name to the place. He turned on us wrathfully, and then went straggling off with his ungainly form as well out of sight as he could get. When he is real mad he spits out "ink" that darkens the clear sea-water, so his enemy can not find him.

The next inclosure was deeper; but the third and largest one was from 50 to 75 feet deep, and perhaps as large as our church, yet we could see clear to the bottom whenever the great fish would let the water be still enough. There were in this larger pond almost all kinds of fish found in the sea—some of them as big as a good-sized boy. They came around us like a lot of hungry chickens; and when I wanted to see them fed, the guide said a boy would get a loaf of bread up at the grocery if I would give him some money. Now, that loaf of bread cost only "tuppence," but it gave the fish and myself more real satisfaction than I ever got out of so small a sum of money before. You see we had been wheel-riding, and it was toward night. I tell you, boys, they know how to make good bread over here.

The fish thought so, for they made more racket than a lot of hungry cows in a barnyard. They would jump clear out of the water, and snap their jaws with a tremendous "clap."

"Oh!" said I, "you have got one big *dead* fish down there. Do many of them die in here?"

When the guard said he was only taking a nap, I thought he was joking; but he got a stick, and said, "You just watch now. If he hasn't got done with his nap he will come back and lie down in the same place and finish it."

Now, boys, when he poked him a little he was as lively as any fish in the lot; but pretty soon he came back to his favorite spot, turned over on his side, folded his hands ("fins"), shut his eyes, and was a dead fish again.

From your teacher,

A. I. ROOT.

SPECIAL NOTICES BY BUSINESS MANAGER

Our customers will help us considerably, and facilitate the handling of their orders, if they will use our order-sheets. If you are out of order-sheets and our addressed envelopes, just send a postal-card request for more.

THE EMERY GRINDER AND SECTION-CLEANER.

We can furnish the emery grinder shown elsewhere for only $1.50, or with sand-wheel and one-half dozen sheets of sandpaper for $2.25. While we don't guarantee that as a section-cleaner it will be a complete success, yet at the price asked there will be no great loss, for it is certainly a success as an emery grinder, for thousands and thousands of them have been sold.

MAPLE SUGAR AND SYRUP.

We have already received a small lot of new sugar, and within a week shall probably have plenty of both sugar and syrup. We can furnish new syrup, first run, at 85c per gal.; 10-gal. lots at 80c; larger quantities quoted on application. New sugar, 9, 8, and 7c respectively, for first, second, and third grades; ½c per lb. less in lots of 50 lbs. or more

BUSINESS AT THIS DATE.

Orders are not abating any in number and size, and there seems little prospect of our disposing of the accumulation of orders and taking care of new ones without redoubling our efforts. We begin this week to run our wood-working shop 22 hours of the 24 with a double turn of men; and by adding to the present large force of those who are packing and shipping the goods we hope by the end of this month to be in better shape to take care of orders promptly. If our friends will have patience we will do our best to serve you.

CARLOAD SHIPMENTS.

During the past month we have shipped eleven full carloads of bee-keepers' supplies, besides several of boxes. One car, the second for the season, went to D. M. Edwards, Uvalde, Tex.; one to Jno. Nebel & Son, High Hill, Mo., and one to Vickery Bros., Evansville, Ind. One car has gone to each of the branch houses at Chicago, Philadelphia, and Syracuse, N. Y.; one to M. H. Hunt, Bell Branch, Mich., and the second car to Walter S. Pouder, Indianapolis. Two carloads were made up of shipments for Australia and New Zealand, and one car of shipments for Jamaica, Cuba, and other West Indian and European ports. As we go to press we are loading the first car for Geo. E. Hilton, Fremont, Mich., to be followed by one for O. P. Hyde & Son, Hutto, Texas. Orders are in for five more cars for export as well as for ten or twelve cars for different points in this country. Most of our less than carload orders are filled within a week or less after we receive them. In a few cases, when something special or odd-sized is called for it is delayed a little longer.

Special Notices by A. I. Root.

YELLOW ONION-SETS.

On account of the scarcity, and advance in price, we can not furnish them at the prices given in our list after this date. The best present price is 20 cts. a quart; $1.00 a peck; $3.50 per bushel, and this price is subject to change without notice. We still have plenty of Prizetaker, White Multiplier, American Pearl, and Silverskin, at the same price given above for onion-sets.

TOP ONION-SETS.

So many of the friends have wanted just a few of the top onion-sets described on page 151 that we have decided to offer them, just a few for trial, postpaid for 5 cts. a dozen. The great point in their favor, so far as my experience goes, is that they are the best-keeping onion, both onions and sets, of any thing I have ever got hold of before.

A NEW ONION, BURPEE'S GIBRALTAR.

Our friends will remember that I described this onion last October, on my visit to friends Greiner and Weckesser. There was a perfect stand of great beautiful onions, all exactly alike. While in size they may not have been much larger than any thing I have ever seen before, the seed must have been an extra strain. I have just purchased from Burpee a limited quantity of seed which I believe will produce the same onion. For the present season the supply of seed is so limited it can be sold only at 10 cts. a packet, or 25 cts. an ounce, postpaid by mail. I think it will pay every one who has a garden to give it at least a trial. Burpee has fixed the price at 10 cts. per packet; so if you want 5 cents' worth only, two of you will have to club together.

HOME AGAIN.

Here I am, friends, once more, this last day of February, on hand ready to serve you. In our next I shall have something more to say about high-pressure gardening in the island of Bermuda; and you want to have at least a peck of Triumph potatoes, either white or red, ready to plant at the proper time. The Triumph is almost the only potato used in Bermuda. It is gratifying to know that they indorse my opinion, to the effect that the Triumph is the best extra-early potato before the world. Of course, the Triumph is the same thing as what we call the White Bliss, only it is red instead of white. And you want to have some good onion-plants ready to try their method of transplanting. In fact, they have been transplanting all their onions for the past *hundred years*, and yet here in America we have been calling it the "*new* onion culture." The onion, above all others they have settled down to, is the Bermuda onion seed, grown especially for them on Teneriffe Island. As the seed has been scarce this season I was unable to get even a pinch of the genuine Teneriffe seed. Well, I think I can find some among our New York or Philadelphia seedsmen. In Bermuda this season they paid as much as $4.00 a pound for it. I expect to be able to offer the genuine Teneriffe for about 25 or 30 cts. an ounce. As it ought to be planted now, or at least some time this month (under glass) I will be prepared to fill orders about the time they reach us. The Bermuda system of heavy cropping will be all right for America where ground is high-priced, say in the vicinity of towns and large cities, and where you want to make every inch of ground count. During the past year, $10,000 worth of stuff was sold from only *six acres*, so a man on board the steamer told me. What do you think of that for "high pressure"?

MUST THERE BE WAR?

The sermon of our good pastor, given in our issue for Jan. 15th, on "The Gospel of Arbitration," came, it seems, at a most opportune moment. Little did he or I dream at the time just how soon such a sermon would be greatly needed.

MISS FRANCES E. WILLARD.

The Outlook says, "The death of no other woman in the whole world, with possibly one exception, could have produced so widespread and profound a sorrow as was produced by the death of Miss Frances E. Willard." Now, who is that other woman, do you suppose? Queen Victoria.

A Woman Florist.

5 EVERBLOOMING ROSES

Red, White, Pink, Yellow and Blush

FOR 10cts

ALL WILL BLOOM THIS SUMMER.

Send 10 cents for the above Five colors of Roses. I want to show you samples of the Roses I grow, hence this offer. **My great Magazine "How To Grow Flowers"** three months FREE with every order.

THE STAR EIGHT EVER-BLOOMING ROSES FOR 25 CENTS.

Star of Gold, deep golden yellow. **Snowflake**, pure snow white, always in bloom. **Bridesmaid**, the best pink rose, lovely buds. **Crimson Bedder**, rich velvety crimson in large clusters. **Mrs. Pierpont Morgan**, delicate shell pink, very fragrant. **Empress of China**, ever blooming pink rose. either bush or climber. **Clothilde Soupert**, the great garden or pot rose. **Franciska Kruger**, coppery yellow and shades of crimson.

Some Special BARGAINS in Flower Collections.

3 Hibiscus : 1 Palm ; 1 Jasemine, ...	25 cts
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8 Carnations. the "Divine Flower" all colors, .	25 cts
8 Prize Winning Chrysanthemums, world-beaters,	25 cts
8 Assorted Plants, suitable for pots or the yard, .	25 cts
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10 Lovely Gladiolas, the prettiest flower grown, .	25 cts
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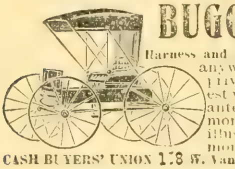

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If so, you surely want Nissly's Poultry Annual and catalog of "Everything for the Poultry Yard," 14th edition. It's a pretty book of eighty 6x9 pages, finely illustrated. full of information. Worth dollars to every poultryman. It's free—only a 2-cent stamp for postage. Address

Geo. J. Nissly, Saline, Mich

Owner of Michigan Poultry Farm, and dealer in "Everything for the Poultry Yard."

OLENTANGY INCUBATOR. This Machine will hatch every fertile egg, so thousands testify. It is the best **Self-Regulating** machine made. **Broodors $5.00.** Catalogue free. Address, GEO. S. SINGER, Cardington, O.

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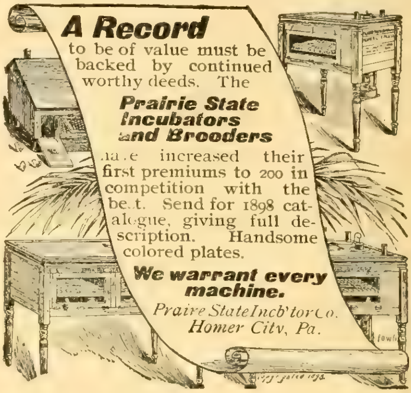

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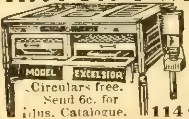

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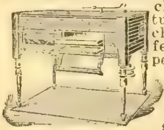

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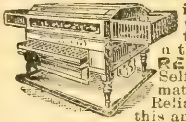

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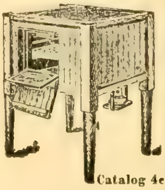

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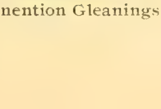

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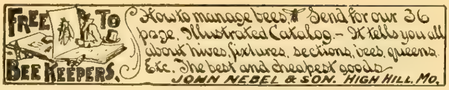

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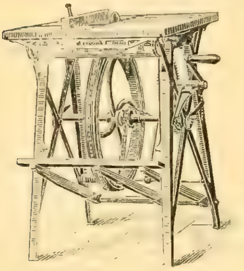

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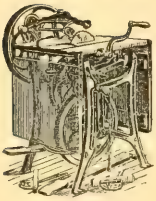

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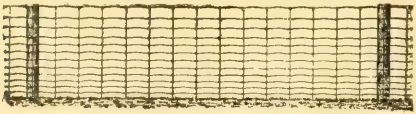

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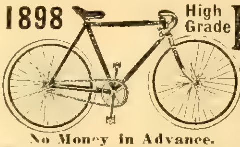

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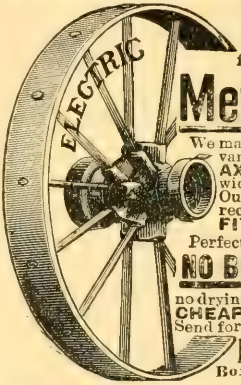

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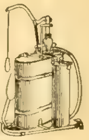

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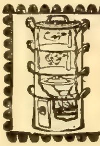

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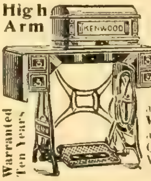

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158-164 West Van Buren St., B-345 Chicago, Ills.

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Honey Column.

CITY MARKETS.

NEW YORK.—Comb honey is moving along very freely; extracted honey in demand. We quote our market as follows: Comb, fancy white, 10½@11; No. 1 white, 8@10; buckwheat, 6¼@7¼; mixed honey, about the same as buckwheat. Extracted California light amber, 4¾@5; California white, 5@5¼; New York buckwheat, 4¼@4½; New York white clover, 5@6. Beeswax, 26@27.

FRANCIS H. LEGGETT & CO.,
Feb. 25. Franklin and Varick Sts., New York.

CINCINNATI.—There is no change in the market. Demand is slow for comb honey at 10@13 for best white, and fair only for extracted honey, which brings 4@6. Supply is fair of both kinds. There is a fair demand for beeswax at 20@25 for good to choice yellow, with fair arrivals. CHAS. F. MUTH & SON,
March 8. Cincinnati, O.

COLUMBUS.—Large arrivals of maple syrup, which is selling comparatively low, causes a lighter demand for honey; still the cheaper grades are moving readily, and we advise shippers contemplating using this market to let their shipments come forward at once. Fancy white, 12½@13; A No. 1, 11½@12; No. 1, 11; No. 2, 9@10; fancy amber, 9; A No. 1, 8; buckwheat, 7@7½; maple syrup, per gallon 85c.

THE COLUMBUS COMMISSION & STORAGE CO.,
March 8. 409–413 N. High St., Columbus, O.

PHILADELPHIA.—Honey selling very poor, the demand mostly for extracted. Almost all comb cleaned up from this market. No. 1 white comb, 11c; amber, 8@9; extracted, 5@6; beeswax, 27. We are producers of honey—do not sell on commission.

WM. A. SELSER,
March 9. 10 Vine St., Philadelphia, Pa.

CLEVELAND.—We quote selling as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6. Beeswax, 26.

A. B. WILLIAMS & CO.,
March 10. 80-82 Broadway, Cleveland, Ohio.

CHICAGO.—A little fancy white sells at 11c if free from any indication of graining, but the majority of white comb sells at 10, with off grades at 8@9; amber is but little called for, and sells at about 8; dark at 7@8; extracted white, 5@6; amber, 4½@5; dark, 4; beeswax, 26@27, and in active demand. The weather is now very suitable for shipments of comb.

R. A. BURNETT & CO.,
March 8. 163 South Water St., Chicago, Ill.

ST. LOUIS.—We quote you to-day's market on honey, which is very dull. Comb honey, white, 10@11; amber, 7½@9; dark, 5@7; extracted white, 4¾@5½; amber, 4@4½; dark, 3@3½; beeswax, prime, 25½; choice, 26. WESTCOTT COM. CO.
March 9. St. Louis, Mo.

BOSTON.—Our market is without any change as to price, but we have to report market well cleaned up on fancy stock in cartons, with a fair demand.

BLAKE, SCOTT & LEE,
March 5. Boston, Mass.

MINNEAPOLIS.—Nothing changed in the honey market save increased demand for fancy white clover. Prices remain the same. Extracted in good demand. Better send in extracted now, but would not advise heavy shipment of comb here now.

S. H. HALL & CO.,
March. 8. Minneapolis, Minn.

DETROIT.—Fancy white not plentiful, and quoted at 12@13; A No. 1, 10@11; No. 1, 10; fancy dark, 9@10; No. 1, 8. There is quite a large lot of honey that is in leaking and dirty cases that will sell for offers. Extracted white, 5@6; beeswax, 26@27 M. H. HUNT,
March 11. Bell Branch, Mich.

KANSAS CITY.—The supply of honey is large; demand light. We quote fancy white, 1-lb. comb, 9@10; No. 1 amber, 9; dark, 8; extracted white, 5@5½; amber, 4½@5; dark, 4; beeswax, 20@22.

C. C. CLEMONS & CO.
March 10. Kansas City, Mo.

MILWAUKEE.—The demand for fancy section honey has been quite good for the past few days; while the low and medium grades have sold some, it goes to prove that the best is always the most sure. The stock continues good, and supplies and receipts keep pace with the sales thus far. We can quote fancy 1-lb. sections, 11@12; A No 1, 10@11; No. 1, 10@10½; No. 2, 9@10; amber and dark, 7@8; extracted white, in barrels, kegs, and cans, 5½@6; dark, in same, 4½@5; beeswax, 25@27. A. V. BISHOP & CO.,
March 8. Milwaukee, Wis.

CHICAGO.—White clover, comb, 11@11½; dark, 8@10; extracted white clover, 6@6½; amber extracted, 5@5½; California extracted, 3@3½ for coast. Market firmer. AMERICAN BROKERAGE CO.
March 10. Chicago, Ill.

FOR SALE.—Cheap, 5 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

FOR SALE.—800 lbs. comb honey in non-drip crates.
L. WERNER, Edwardsville, Ill.

FOR SALE.—Extracted clover honey, in 60-lb. cans, f. o. b. at 6c. C H. STORDOCK, Durand, Ill.

CHAS. ISRAEL & BROS.,
486, 488 & 490 Canal St., Corner Watts St., N. Y.
Honey and Beeswax.
Liberal Advances Made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

The A. I. Root Co.'s Goods At Their Prices.
Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted. M. H. HUNT,
Cash for beeswax. Bell Branch, Mich.

EGGS FROM prize-winners—Barred and White P. Rocks, Light Brahmas, Single-comb Brown, White, and Buff Leghorns, and Black Minorcas, 13 for $1.00; 30 for $2.00. Send for circular.
CHAS. RUE, Minerva, Ohio.

ROOT'S GOODS
Shipped from Jackson, Mich., at Root's prices. Send for list. W. D. SOPER, Box 565, Jackson, Mich.

FOR SALE.—One-half interest in five hundred colonies of bees. Good opportunity for a man with some money. Finest location to be found in the alfalfa district. JOHN A. HARRIS, Harris, Col.

In writing advertisers, mention GLEANINGS.

SPECIAL NOTICES BY BUSINESS MANAGER

WATER-WHITE CALIFORNIA HONEY.

We are entirely sold out of this beautiful honey, but we expect. after three or four weeks, to have another carload direct from the producer in California. In view of the fact that they have had very little rain so far in Southern California, and no prospect of a crop of honey there this season, this car we are getting will cost us more than we paid last fall, therefore we can not take any more orders at the old price. We shall have to have $1.00 per gallon in one-gallon cans; 8c per lb. for a single 60-lb. can; 2 cans in a case, at 7½c; 5-case lots at 7c. It is a very superior grade of honey—very white, very thick, and does not granulate, and is well worth the extra price we ask It is likely to be a scarce article till they have another crop again in Southern California, which, from present indications, will not be before 1899. We still have some of the light-amber California honey, which does granulate, but which is very nice. Price 1c per lb. less than above prices on water-white. We can also furnish nice clover extracted honey at ½c less than water-white.

BUSINESS AT THE HOME OF THE HONEY-BEES.

We are now running our wood-working department full blast 22 hours out of 24, six days in each week. The men in the shipping department are working 14 to 15 hours a day, and other departments are running over time. We have over two hundred people now on our pay-roll—more than we ever had before. We are putting in additional machinery, and men to run it wherever we can find room for them. Notwithstanding all our efforts, we are losing ground and getting farther behind on orders every week. We have turned away a good deal of business for special goods which was offered to us, because we believe our first obligation is to the bee-keepers. In making estimates on goods we have discouraged the sending of more orders here, by telling them we could not promise shipment under two or three weeks from receipt of order We have a letter from the The G. B. Lewis Co., Watertown, Wis., which indicates that they can handle more business, and we are going to try and have them help us out for the present, and try, if possible, to catch closer up on orders. We are planning to enlarge our capacity this summer by an addition to our wood-working building, and will endeavor to get ahead by beginning early in the fall to stock up all dealers and branches that can take on stock so early. If we should have unfavorable weather, orders may slack up enough to enable us to catch up. We hope we may be able in some way to get into position again to take care of orders with greater promptness than we find it possible to do at the present. At this date we have a number of carload orders that were placed before March 1st—in all, about twenty carloads—unfilled. Very few less than carload orders, placed before March 1st, remain unfilled, and a good many received since March 1st have been shipped.

Cash orders, as a rule, filled first.

Special Notices by A. I. Root.

On page 229 I fear I have left a chance open for misunderstanding. Please do not think I am more interested in letters that contain money, for it is really the other way. It is true, I give more attention to letters containing money, because there is a responsibility attached to them. Letters containing suggestions, or even questions, may be laid on my table to answer later; but it is a standing rule all over our establishment that a letter containing money must not be dropped for a moment, nor laid down anywhere. First, the money must be acknowledged; second, the goods must be sent in return for the money just as soon as they can possibly go. Sometimes, when many cares press in different directions, I go over my mail hurriedly, sorting out the letters containing money, or orders from well-known people whose name is as good as cash, and I give these latter a careful consideration. Others can wait till I get over the press of other duties. Printed tracts and printed matter are often laid aside, to be thoroughly examined later on.

BUNCH YAMS AND VINELESS SWEET POTATOES.

While the reports of last season have not all been entirely favorable they are so nearly unanimous that we shall offer both potatoes and plants for sale again this season. Either kind, 20 cts. per pound by mail, postpaid, or 10 cts. if sent by freight with other goods; ½ peck, 40 cts.; peck, 60 cts.; bushel, $2.00. There are two distinct varieties—the cut-leaf, sometimes called Gold Coin, and the round-leaf, called Spanish, or General Grant. Prices of plants will be the same as in our seed catalog Yellow Jersey sweet potatoes, specially for seed, ½ peck, 30 cts.; peck, 45 cts.; bushel, $1.50.

PRIZETAKER ONION-SETS.

I have just had one of my "happy surprises" in finding that our Prizetaker onion-sets have kept all through the recent damp warm weather just as nice and hard and firm as if they did not know how to sprout at all. Our American Pearls, Yellow Danvers, White Multipliers, and, in fact, almost every thing else this spring except the top onion-sets mentioned elsewhere, bothered us more or less by sprouting. The Prizetaker sets have also given very nice large onions quite early, so far as we have tested them or have heard of their being tested. We still have several bushels left at 20 cts. per quart; $1.00 per peck; $3.50 per bushel. Large sets will be one-half the above prices.

TOBACCO DUST.

We have just succeeded in getting a very large lot of tobacco dust which we can offer in sacks of 100 pounds each at the reduced price of $1.50 per sack. The deadly qualities of this narcotic seem to make it one of the best remedies for almost all sorts of noxious insects; besides, it is at the same time an excellent fertilizer.

Since the above was in type, our boy Frank informs me that tobacco dust will keep mice out of hot-beds, cold-frames, and greenhouses better than any thing else. We object to poison, because the cats, chickens, etc., are liable to get hold of it. We do not like cats in a greenhouse, because they have too little respect for valuable plants. Traps are all right, providing you can entice the vermin; but the tobacco dust is ever so much less trouble, and does the business. Besides being worth all it costs as a fertilizer, it keeps off every insect known, including snails, and last, but not least, mice.

TOP ONION-SETS—MORE ABOUT THEM.

"Don't you want to buy some acorn onion-sets?" said a man yesterday.

"Acorn onion-sets? What in the world are they?"

I went and looked at them, and they are just like what I told you about on page 151, except that they are red instead of yellow, and about the size of acorns. They were hard and firm—not a sprouted one in the lot, and none that showed any sign of sprouting. He said he had just kept them in his cellar as he always did; that that kind never would sprout until they were planted; that they made big hard onions, and that the onions, too, would keep in any ordinary cellar, without sprouting.

Now, friends, this is very much like the onion-sets my mother and I used to grow on top of the stalks some fifty years ago; and I remember we used to make a good deal of money, too, with our onion-sets. You plant out big onions in the spring, and each onion will send up three or four stalks, and each stalk bears a bunch of sets. If you will take up your old onions after the sets are gathered, put them in the cellar, and set them out next spring, the same old onions will do the same thing over again year after year. The sets make large nice firm good-keeping onions. The only reason why these old-fashioned onion-sets have been dropped is because it is so much easier to handle and plant the black seed than to plant the sets that usually cost so much money. I bought all my friend had, and we will sell them to you, while the supply lasts, at 10 cts. per pint, or 15 cts. per pint, postage paid, by mail; or for 5 cts. we will send you one dozen each of red and yellow, prepaid by mail.

Now just one thing more. Mr. P., who sold me these sets, said that one year, when onion-sets were scarce and very high, he raised $10.00 worth on one square rod of ground. I for one have got tired of handling onion-sets that will sprout before winter is half over, in spite of any thing we can do, and I am going to raise a lot of top onion-sets.

Caution.—Do not get these confused with the winter or Egyptian onion, which bears tops in the same way, but these latter tops will not keep, so they must be planted in the fall, as a rule; and they do not make large onions. They are just for bunch onions.

KIND WORDS FROM OUR CUSTOMERS.

"STICKERS" FOR THE RIGHT.

Last fall we sent a customer some seeds by express. After a long delay the express company claimed that they could not find the man, and wanted to return the seeds, and asked us to pay charges both ways. We explained to them that they had not forwarded the seeds according to directions, and told them that, to atone for their delay and neglect, we thought they should forward them to destination free of charge or else return them to us free of charge. Now, some people have an idea that you can not make an express company do the fair thing. The following from our customer seems to indicate that they do, at least sometimes do the fair thing, after all—at least, where you hang on to them.

Mr. Root:—The buckwheat and clover-seed that you shipped me last fall was delivered yesterday. The agent at Stoughton said the N. Y. & B. Ex. Co. had ordered him to deliver as soon as possible, and free of charge. He says the A. I. Root Co. are "stickers," and that there was no let-up till the goods were delivered or returned free of charge. Please accept thanks for being such "stickers" for the right.

Brockton, Mass., Mar. 8. GEO. M. BUCK.

RELIEF FOR THE CUBAN SUFFERERS.

Since our $30 was sent, as mentioned in our issue for Feb. 1, we have received and sent forward as below:

The A. I. Root Co.:—We beg to acknowledge receipt of yours of the 5th, inclosing check for $8.75 to be used for the starving Cubans, and collected by you from the following persons: Mr. Horn, $1.00; Mrs. Warner, 50c; J. A. Buchanan, $1 00; H. W. Vankirk, $2.00; Burbett Hall, 25c; C. A. Bunch, $1.00; Lydia Wagner, $2.00; S. T. Pettit, $1.00. Please express the thanks of the Cuban Relief Committee to each and all of these givers, and also our thanks to you for the interest you have taken in this matter. Very truly yours,

H. A. GARFIELD, Treas. Cuban Relief Fund.

Cleveland, O., March 7.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

In writing, mention GLEANINGS.

Farm and Apiary for Sale.

Desiring to move to Kansas I hereby offer for sale my farm in Hagerman, Idaho, consisting of 120 acres, on which is a small house of two rooms; also stable, corral, etc. Thirty acres are fenced. I have out some grapes, 10 pear-trees in bearing; 31 bearing peach-trees, 30 younger ones, and a lot of seedlings; 33 plums and prunes, all bearing; ¾ acre of strawberries; 8 acres alfalfa—first cutting last season, 32 tons.

I shall have about 100 colonies of bees in the spring, about half of them in three-story hives and the rest in two-story ones, all run for extracted honey. Hives, frames, smokers, extractor, etc., all perfect; hives all painted. Price $2000. One-third can stay on mortgage at 5 per cent.

My farm is one mile from postoffice, store, blacksmith shop, etc. For further particulars address

ROBT. P. LANCHESTER, Hagerman, Idaho.

In writing, mention Gleanings.

1898 Queens for Business. 1898

Queens for honey; queens for strong colonies. Competition in quality but not in price. Supplies at bottom prices. Price list free.

J. P. H. BROWN, - Augusta, Ga.

In writing, mention Gleanings.

Two Bee Papers for the Price of One.

To all new subscribers, and also to those who renew before their subscriptions expire, and inclose $1.00, we will send the *Busy Bee*, a monthly bee-paper, in addition, free.

THE A. I. ROOT CO., Medina, O.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. **"Practical Hints"** will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

FOR SALE. New eight-frame 1½-story Simplicity or Dovetailed hives, nailed and painted, with sections and starters, $1.20 each; American hives complete, $1.25; 500 all-wood Simplicity frames, $2.50 for the lot; "Langstroth on the Honey-bee," revised, $1.00 each; 4-dozen quart pepper-box bee-feeders, 5c each; second-hand American hives, newly painted, and new sections, frames, and cases, $1.00 each. Write at once for these bargains to

THEODORE BENDER, Canton, Ohio.

Fay's Currants.

Large stock, nice bushes, $2.50 per 100. Barred P. Rock (Hawkins' noted strains) eggs, 75c per 13, or 26 for $1.25. **FRED H. BURDETT, Clifton, N. Y.**

In writing, mention Gleanings.

Write Quick for circular of Cole's Garden-plow. Best in use.

G. W. COLE, - - - Canton, Ill.

S. C. BROWN LEGHORNS. 13 eggs, 75c; 26, $1.00; good stock. Also pure Italian bees. Circular free. H. M. MOYER, Shanesville, Berks Co., Pa.

Vegetable Peaches — who would not grow them? Perfectly delicious. See Cook's adv't., page 234.

Rootville Wheels Cheap.

ONE $100 COLUMBIA.

Belonging to Huber Root; '96 pattern; keyless cranks; 1⅛-inch tubing; Hartford single-tube tires; weight 24 lbs. In splendid condition, not having been ridden over 200 miles. $30.00.

ONE $100 WHEELER.

'96 pattern; keyless cranks; 1⅛-inch tubing 25-inch frame; Morgan & Wright tires; re-enameled, and in first-class running order. $22.50

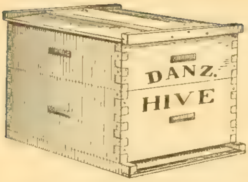
ONE COLUMBUS, $75 MODEL.

Belonging to A. L. Boyden, '96 pattern, large tubing; ridden one season. Re-enameled, and in excellent condition. $20.00.

ONE $150 COMBINATION TANDEM.

Belonging to E. R. Root, made by the Remington Arms Co.; ridden but little, not over 50 miles all told, and almost new; long cranks, wood handle-bars, large tubing, long reinforced drop forgings; in fact, the strongest and most rigid tandem ever built, for only $55.00.

THE A. I. ROOT CO., Medina, Ohio.



$100

Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,** or F. DANZENBAKER, Box 466, Washington, D. C.

In writing, mention Gleanings.

THE CHOICEST OF TESTED QUEENS BY RETURN MAIL, $1.00 EACH.

These queens, reared from fine Italian stock, are large, yellow, and prolific; their progeny are unexcelled as honey-gatherers, and are guaranteed to give satisfaction.

J. W. K. Shaw, Loreauville, La.

In writing, mention Gleanings.

Prosperity.

It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
FREMONT, - - - MICHIGAN.

Catalog Free. A. I. Root Co.'s Goods

for Missouri and other points, to be had from
JNO. NEBEL & SON, HIGH HILL, MO.

Philadelphia Branch of

THE A. I. ROOT CO.,

10 Vine Street.

Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

Booking orders for Nuclei and Italian Bees for shipment. Write for prices.

In writing, mention Gleanings.

Don't Buy Supplies

For 1898 until you see my 38th Annual catalogue. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

The A. I. Root Co.'s Goods, at their Prices.

Parties desiring these goods can get them of me, and **save freight charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page Illustrated Catalogue free. Address

W. W. CARY, Lyonsville P.O.,
Colrain, Mass.

In writing advertisers, mention GLEANINGS.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

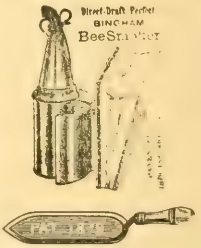
Smoke Engine (largest smoker made.)	4-inch	stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
Plain	2-in.	"	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

In writing advertisers, mention GLEANINGS.

160-page Bee-book Free!

Every person beginning with bees should have one or more books on the subject of bee-culture, besides a good bee-paper. The **American Bee Journal** has a book called "BEES AND HONEY," which it *gives* to each one of its new readers. Send for a *free* sample copy of the weekly **American Bee Journal,** and learn more about this book offer.

Address

GEO. W. YORK & CO., = = = 118 Michigan St., Chicago, Ill.

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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

Published by The A. I. Root Co.
$1.00 per Year
Medina, Ohio.

Vol. XXVI. MAR. 15, 1898. No. 6.

STRAY STRAWS FROM DR. C. C. MILLER

SECTION CLEANERS are bound to come. That on p. 186 looks hopeful.

HURRAH FOR OMAHA! *if* the fare isn't more than to Cincinnati.

GRAVENHORST says for years he has successfully wintered reserve queens by putting two or three nuclei in one hive, as given in GLEANINGS, p. 132.

I DON'T WANT p. 175 read by any one in this region. I've had trouble enough already getting my honey packed; and if my packers should read p. 175 I'm afraid they'd want to veneer worse than ever.

THE WHOLE SECRET of getting sections without pop-holes, *Review* says, lies in having freest communication all round the section. Guess that's about what GLEANINGS has said. Likely right, but fully testing won't hurt.

IN EVIDENCE that the T super is simply intolerable, the editor refers to S. A. Niver, p. 81, where Niver says the only experience he ever had with T supers was in smashing some old ones! [Turn to Tilt's article on page 207. —ED.]

TALKING OF GRADING comb honey, Hutchinson says it's all right, when you've graded a case of fancy honey, "to select from *that case* of sections those that are the best, and put them next the glass." I'm looking with some interest to see this *Review* hastily reviewed in next *Review*.

L. A. ASPINWALL, in *Review*, says with ¼ in. space between and above top-bars, burr-combs will be built with insufficient storage room; that plain sections must be removed as soon as well filled, to prevent bulged edges; that less expensive cases will be used by him, as the no-drip feature doesn't fully work with plain sections.

A CORRESPONDENT of *Am. B. J.*, page 122, wants to know what became of part of the syrup he fed his bees. He gives careful weights, and finds that 5 colonies not fed lost 6⅗ lbs. average in 73 days from Sept. 27, while 10 colonies fed syrup lost 13 lbs. average. Isn't there always considerable loss whenever we feed bees?

"APPLY CASTOR OIL to the projecting ends of brood-frames, edges of closed-end frames, etc. . . . . When this is done the parts are always loose, and may be easily taken out or moved."—Ed. Jolley in *Am. B. K.* A valuable thing, if it doesn't turn out like paraffine, and I kind o' think it won't.

"THE TEXT-BOOK," the periodical publication, and practice, constitute the 'three graces.' And the greatest of these *is* practice," says *Am. B. K.*, very truly, and it hints that a man would be a fool to spend years in learning by practice what he can gain in a few hours by reading what others have learned from practice.

A WRITER in another journal says he likes to see me "sassed" in footnotes to Straws. I've long noticed, Mr. Editor, that you treated me with "too much flippancy," and now that others notice it I hope you'll be more respectful. [It is more fun to "sass" you than any one else. If you do not like my "too much flippancy," then "flip" back.—ED.]

THAT "SASSY" NIVER thought that that one section without pop-holes of Danzenbaker's was about the only one that ever lived. Hutchinson says he had a whole case of 'em at Buffalo, and he, H., ought to know, for he bought 'em, lugged 'em to all the fairs, and then sold 'em at 20 cents a pound, and there wasn't a pop-hole in the case. [Yes, Danzenbaker had several cases of them here in Medina, and they were not produced by him, either.—ED.]

"I FEEL SURE," says Editor Hutchinson, 'that, if the matter could now be put to vote, amalgamation would be carried unanimously. What is there to hinder such a vote being taken now?" I'll stand up to be counted with W. Z., if he'll put "almost" before unanimously, but I don't know the answer to his question. [There is nothing to hinder a vote being taken now, if I am correct, providing that ⅔ or at least a majority of the members of both organizations ask for such a vote.—ED.]

YOU WONDER, Mr. Editor, I didn't notice your getting your answer hind side afore about bees on cellar bottom, p. 141. I did notice it, and started after you with a Straw, but I thought that was too light a weapon for so heavy an offense, and started a club by a later mail. [You need not club me, because I take it all back, doctor. The type did not let me say what I wanted to. My tongue has a fashion of telling things t'other side to; and the worst part of it is, the shorthand notes take me for what I *say* and not for what I mean.—ED.]

SPACING-STAPLES are used in Germany with one leg ⅔ as long, and cut square off. They've been advertised so much and so long that I suppose they must be considered better. I wonder why. Possibly because there's less danger they'll be pushed in deeper when in the hive. [I should not be surprised if that short-legged staple would be a good thing. The object of having one leg shorter, and cut square off, is, I presume, as you suggest, that there may be less danger of their being pushed deeper into the wood when pressure is exerted on them *en masse*.—ED.]

THE EDITOR wants me to hit Mr. Neece, p. 183. Nary a hit. Mr. N. is not the kind I'm hitting. It's the fellows who sell 15 oz. for a pound. A section so light it can't go for a pound is all right. And I've a very kind feeling toward a section as thin as bees left to their own sweet wills would build. [You mix me all up, doctor. You have just ordered 15,000 sections 1⅞ wide, old style. Now, 1⅞ will not hold a pound, but will run from 14 to 15 ounces. To make your preaching and practice coincide, you either ought to use 2-inch sections or else those 1½ or 1⅜ wide.—ED.]

SAY, MR. EDITOR, on p. 182 you tell W. B. Ranson a 5x4¼ section would have to be so "thin as to render old section-holders useless." Why, bless your heart! what does he care for your "old section-holders"? He's a T-super man! You didn't mean to be so unfair, did you? [I shall have to acknowledge the corn. I had forgotten the fact, temporarily, that he was a T-super man. But how about the real point, that a 5x4¼ section would be too thin? There is such a thing as a nice golden mean; but too much of a good thing is sometimes bad. Either a 5x4¼ section would have to hold more than a pound, or else be so thin that it would topple over with the least suggestion.—ED.]

DOOLITTLE is emphatic that field-bees give their honey to nurse-bees, the latter storing it in cells. J. A. Golden says in *Review* that he has spent much time watching his bees, and, when furnished a proper passageway, the great mass of his field bees make straight for the supers. Can't these brethren come to some kind of understanding so that we can continue to believe both? [Now, doctor, you did not tell us what *you* thought about it; and for fear you may throw the same insinuation in my face, I will venture a guess that they do both ways. If they are both honest and accurate in their observation, then it is fair to suppose that bees follow no invariable rule in the matter.—ED.]

CLEATS ON FENCE are said to be two-twelfths inch thick. I'm puzzled to know why one-sixth wouldn't do as well. [Yes, $\frac{1}{6}$ does seem more reasonable; but when we take the dimensions in the fence we have to deal with $\frac{1}{12}$, $\frac{2}{12}$, and $\frac{3}{12}$. It is easier to see that $\frac{2}{12}$ is ⅔ of $\frac{3}{12}$ than that $\frac{1}{6}$ bears the same proportion to ¼. In the Canadian journals I know it seems to be the rule to talk in $\frac{1}{16}$ths, $\frac{1}{32}$ds, or $\frac{1}{100}$ths. If, for instance, they are talking in $\frac{1}{16}$ths, the same denominator is carried clear through, and only the numerator is changed; that is, they have the same noun, but change the adjective. For instance, a certain thing is $\frac{7}{16}$ths one way, and $\frac{8}{16}$ths another.—ED.]

THAT STICKER, p. 170. Wouldn't less reading be more sure of attention? Might amend in this way:

Handle with extra care.
No Hand-trucks.
Set down easy.
Haul only on Springs.

If they are set down easy, they'll hardly dump or drop. The finger ought to point to bow or locomotive, but hardly to horse, unless the horse walks beside wagon. [Your idea of less reading is just right; but as to whether the finger should point to the horse or not, some say one way and some another. Let us have a show of hands.—ED.]

HASTY'S been trying different diets for "bodily and mental off-the-track-ness." One of the last reported was a daily ration of 12 oz. candied honey to 10 oz. granola and crackers and a cup of milk. He says he's going to try some more things. I hope not too many. I like Hasty, and should miss him. [If Hasty can stand ¾ lb. of honey at a meal, for three meals a day, day after day, he can stand more sweet or more honey than any other person I have yet come across. The editor of the *Busy Bee* tells about eating lots of honey; but I do not think he ever stated just how much he could take care of at a ration day after day.—ED.]

THE *Busy Bee* man disagrees with GLEANINGS. He says locality and season have nothing to do with it; he's eaten sweet-clover honey from all parts of the country, from New York to Utah, gathered at all seasons when sweet-clover blooms, "and it is always the same—just as fine as it can be." I got a 60-lb. can that Editor York thought finest in quality. I didn't think it remarkably fine, and others thought it disagreeable. I've sampled other that I thought delicious, but it may not have been true to name. The quality of sweet-clover honey seems as yet an indeterminate quantity. [My notion of sweet-clover honey is the same as Dr. Miller's.—ED.]

SEEMS HARD to stop an erroneous statement once it gets started. Nov. 15, it was said in GLEANINGS that an old-style separator "after being used a year had to be discarded," and that the fence was good for years, when any one who has had good old-style separators ought to know that they are also "good for years." Yet here comes, three months later, the same error, slightly modified, in *American B. J.*, "the old-style separator, which, after being used a year or so, had to be discarded." With a friendly feeling to the new separator, I don't want to see that slander on the old one perpetuated. [Now look here, doctor, you once told me that your wood separators used to make the best kind of kindling, and that you did not care to use them more than one season; that it was cheaper to buy new ones than to clean the old ones or to take the naughty kinks out of them. You must have flopped over since the advent of that naughty canard.—ED.]

ONE-FOURTH INCH space between thick top-bars allows more brace-combs than I like. I'd give something to know whether it would be any improvement to have more or less than ¼. [It may be that it would be much better to use $\frac{2}{12}$ inch rather than $\frac{3}{12}$; that is to say, ⅔ of a bee-space rather than a whole one. I know bees can pass freely through a $\frac{2}{12}$ space, for I have been trying it this warm balmy day, the 7th. We placed two cleats on the hive that are $\frac{2}{12}$ inch thick. Between the cleats were several bees crawling. On the cleats we laid a plain sheet of glass. The bees passed very readily back and forth under the glass, although they did not stand up quite so high. They had to "scrooch down" just a little. The average bee, when walking full height, stands about $\frac{3}{16}$ inch high. Now, the question is, would bees put bits of propolis and wax between the top-bars if they were spaced just wide enough for them to pass between?—ED.]

WELL, MR. EDITOR, you *are* exasperating for sure. When I ask for particulars about "getting section honey from two-story hives," you refer me to p. 141, where you give just seven lines, and say you don't take away brood. Talk about insult! B-r-r-r! How did the amount of comb honey from the two-story ones compare with that from one-stories that didn't swarm? How much per colony? How much brood was kept in the two-stories? How many of 'em swarmed? Did you start in spring with two-stories, or when did you give the second? Just before the queen commenced laying in the unoccupied story, was it above or below? Did you use any means to induce the queen to make a start in the other story? I'd give a pile to be able to run two-stories throughout the season; and if you've got the combination, squeal. [Well, doctor, you are exasperating for sure. You have thrown at me such a maze of questions that I shall have to take time to go over the ground carefully a little later on. Now, if I forget it before the honey season next year, just point me to this Straw. I will say right now that I do not know that I have got the "combination;" and perhaps before I can answer all of your questions I may have to go over the thing again in practice to know exactly how I did do last summer.—ED.]

"TO USE *past* for *passed*, and *must* for *mussed* destroys many a fine shade of meaning," quoth ye editor, p. 166. Try it on Leland. Say to him, "From the way your hair is must, you must have past a sleepless night the past night," and then see how much better he'll get the fine shade of meaning if you say, "From the way your hair is mussed, you must have passed a sleepless night, the past night." If that doesn't illustrate it properly, try your hand at an illustration. [I have not consulted Leland yet. Indeed, he is hardly old enough to perceive the difference in the two readings, even if there were quite a difference. But to my notion the first sentence reads rather queerly. As I read over the words "is must," the thought struck me instantly whether *is* had got into the place of *must*, or *must* in the place of *is*. But if even half of the printers and publishers would flop over, I guarantee you I could adapt myself to the change.—ED.] [But the way of spelling a word has reference only to the reader, who is supposed to read to himself. If he reads, "She is an old queen," or, "She is an old quean," the effect is "allee samee" to the listener; but the legal meaning can be determined only by the spelling; and these differences in spelling you propose to obliterate. A law that was *past* last August had become obsolete as long ago as that time; but a law that was *passed* then went into force at that date, and may still be in force. These nice distinctions would be *mist* (missed) if the new spelling were adopted.—PROOF-READER.]

Ridge-Pole
Musings.

MORE ABOUT YIELDS OF COMB VERSUS EXTRACTED.

Wax Secretion, etc.

BY R. C. AIKIN.

Some will gather from the previous article that the slow flow, in which the colony will be slow to build comb, is an argument proving that ready-made combs would get a crop of surplus when sections with starters would not. Not so. The great majority of flows are of short duration, I think usually not exceeding three to six weeks. A 30-days' flow at 2 lbs. per day would give a total of 60 lbs., which, when ripened, would be only 35 to 40 lbs., about what is necessary to fill a ten-frame brood-chamber. Since, then, most flows are of short duration, we more frequently have to do with flows of limited time, though free enough while it lasts, and, when it lasts long enough to give a yield sufficient to give surplus, there comes with it wax secretion sufficient to build comb to hold it.

Don't lose sight of the fact that weak colonies can gather only in proportion to their numbers. A colony that can barely spare from the brood-nest enough bees to work but 10 to 20 sections at a time could not put up more than a brood-chamberful of honey in a 30-days' flow, yielding, for a good colony, 2 lbs. of nectar per day. If such a colony had the ready-made surplus combs you could get quite a lot of honey in them, it is true, but at a sacrifice of winter stores, and of the colony in the end. Take, as an illustration, the two colonies used as scale colonies in 1897. That was a year in which my general average surplus was 45 pounds, the stock as a whole being in about average condition of strength, etc., when the flow was on. Scale colony No. 1 was not quite an average one; and during the main part of the flow they were contracted to a very small brood-chamber — about five L. frames capacity. I took from this about 50 lbs. of surplus in sections, leaving, I think, not over 20 lbs. of stores, probably less. Their total gain was about 88 lbs. during the flow proper — a little being gathered outside the record dates. This colony's average daily gain was 1⅗ lbs. in a 55 days' flow, or, rather, two flows of 30 and 25 days respectively, divided by about two weeks in which a very trifle over their living was obtained.

Colony 2 was better than the average, had a nine-L.-frame brood-chamber throughout the season; made a daily average of a trifle over 2 lbs. gain; gave 75 lbs. of section honey, and probably 25 lbs. of stores. This colony did not show as much shrinkage as the other — that is, gave a greater yield of *honey* in proportion to the gross gain in nectar; but I attribute this to a quicker ripening, because the colony was much stronger; hence the greater evaporation during the day between morning and evening weighings would account for the discrepancy.

This season of 1897 was very close to an average one as to condition of colonies and amount of surplus; but the strength or freeness of flow was rather weak, and its duration somewhat extended. While both of my scale colonies were managed for comb honey, it is a significant fact that my average yield of extracted was just about the same as my comb-honey average, though I think the extracted-honey colonies have a little the advantage in the amount of stores on hand. Knowing the tendency of the extracted stock to store in the super combs at the expense of winter stores, I gave them larger brood-chambers to insure sufficient stores.

It appears, then, from the foregoing, that in this average season I was able to take just about as much of section as extracted honey, but it was done with colonies that did not swarm. I said my stock was in average strength, but I suspect my standard of strength is above that of the average apiarist. They were in very fair condition at the opening of the flow, all increase made carefully by division, and at the rate of about two new ones to three old ones. A few of the weaker colonies gave no surplus at all, some of the best giving almost (a very few quite) 100 lbs.

It appears, then, that the colony of only fair to average strength will not usually gather more than necessary stores during an ordinary flow; while if the daily gains reach 2½ or more pounds they will take to comb-building. An average daily gain of 4 lbs. will give a net gain in honey of about 75 lbs. in a 30-days' flow, and will cause any *ordinary* colony to secrete wax and build comb freely. If, however, the average colony can not gain at least 2 lbs. a day of raw nectar, we should not expect any surplus of either comb or extracted unless the flow exceed 30 days' duration. Such a rate of gain, long continued, will induce wax secretion and comb building, and average to strong colonies will build comb and store in sections after brood-combs are filled, if swarming does not occur.

My understanding of California honey-flows is that, as a rule, they are slow but steady. If this is true, I should say that the average apiarist there would get a greater yield of extracted than of comb, because, to have comb built, requires a reasonably free flow or very strong colonies. For years I have maintained that the ratio of yield, as between the two products, comb and extracted, has been greatly overestimated in favor of the extracted, though at no time have I claimed that the extracted did not lead a little.

There are three conditions under which the yield of extracted may exceed that of comb by quite a little, one of which appears in the foregoing paragraph. Another condition is one in which it is so cool that comb can not be built successfully, and yet a free secretion of nectar, and weather such that the bees can bring it in. The third condition is a very *abrupt* and *profuse* flow.

The second condition I think rarely exists, though it was claimed at the Lincoln convention in 1896 that such was the case frequently in Nebraska. I think a little protection and strong colonies would overcome most of that difficulty. If such conditions came about when a colony was well provided with old or field bees, and no *young* or comb-builders, I can see that the difference would be quite marked. This would be much more likely to occur in a very late flow than in an early or midsummer flow.

The difficulty about an abrupt or profuse flow is that, coming on so suddenly, every thing may be filled to overflowing before wax secretion gets under way. The principal loss in such case is in the interim between filling the ready-made comb and getting wax secretion and comb-building started. I have had one case of that kind in eight years, and not over two in over twenty years. The case eight years ago was one in which the change was so rapid that, from a condition in which old stores were being rapidly used for support of brood-rearing, four days' time filled all empty comb, including a number of bait-combs in supers. Only these very abrupt changes from no flow at all to a free one can have much weight under this head.

The argument about the quantities of honey consumed in wax secretion, and the labor of building comb, I consider of very little weight. I need not prove that the secretion is an involuntary act on the part of the bee, in order to sustain my position. The fact that much wax is secreted when not needed is sufficient evidence to show that that factor does not count much outside the conditions hereinbefore mentioned. I once received a shipment of bees by express; and while there was no necessity for the comb-building act they did build comb in their cages, and were loaded with wax, and had it plastered in many places, evidently just to get rid of it. I have also observed much wax go to waste many times in regular normal colonies. I believe that a flow of nectar or handling of honey is always accompanied by more or less wax secretion. It is an involuntary act, or else voluntary, but without foresight or reason to regulate it. Perhaps conditions lead them instinctively to secrete, or it may be wholly involuntary.

SCALE-COLONY VARIATIONS—SOME REASONS.

For several years I have suspected that one scale colony was not a true index. So believing led me to desire to have either a number of colonies on one big scale, or as many each on a separate scale. The nearest I have been able to accomplish my desire was last season when I kept two colonies on two scales, and more scales would have been used could I have had them. Some things were noted that, at least to me, were very interesting.

Colony one was in a hive about 15x17 inches square, inside measure, 9 inches deep, a divisible brood-chamber. The brood-frames were 4¼ deep by 17 long. When the flow came on, this colony had not yet built up strong enough to use a super, especially in the moderate flow prevailing. They worked with great vigor. From June 6 to June 12 they gained 3 lbs.; the 13th and 14th, 1½ lbs. each; and the 15th, 2½. Colony 2 was a much stronger one, and stood right beside No. 1, yet their gain exactly tallied with No. 1 up to the 15th, when it was only 1½ instead of 2½, as was No. 1.

The 16th and 17th, heavy west and northwest winds prevailed; and although clear, and maintaining about the average temperature as the preceding days, nothing was gained by either colony. On the 16th both colonies had queen-cells, which I removed. The 18th they gained 2½ and 4 lbs.; the 19th, 5 each; the 20th, 5½ and 6½; the 21st, 2 and 2½—rain coming in the afternoon. Also again cut cells from No. 1. The 22d it was 3 and 5. Notice that colony No. 1 was equal to No. 2, although much the weaker, up to the 15th, when it had 2½ against No. 2, 1½. On the 23d I manipulated No. 2 and lost their record for that day, while No. 1 gained 3 lbs. and cast a swarm about noon, which returned, having a clipped queen. The 24th showed 1 and 1½ as the gains.

On the 25th the gains were 0 and 1½. From colony No. 1 I removed all brood, and all comb except 2 of those 4¼x17 frames, contracted to one shallow chamber with starters in the other 8 frames, and put a super on over an excluder, hoping thereby to stop their sulking and swarming notions. I also unqueened No. 2, which had no cells started. Right here is something that interested me much. Colony 2, although unqueened, made, the following days, gains of 4, 7, 7, 6, 6, 3½, 3, consecutive days, the best week's work done by either colony throughout the season. Colony 1 made for the same days 1, 2½, 1½, 1, 1, 1½, and 1½.

Three days after removing brood from colony No. 1 I could find neither queen nor eggs, so I ran in at the entrance a laying queen, which the next day I found balled; also found the old queen and removed both, leaving them queenless and broodless for a day, when a laying queen was accepted at the entrance. This queen soon had brood started, and from this time on the work of the two colonies was about equal to the end of the season. While the most of the time the daily gains were very nearly equal, there would be a day occasionally when one or the other would show a marked variation.

During this latter part of the season when they were working together, the most of the time showing like gains, each had its laying queen and plenty of room. Why it was, that for a day one should go beyond or fall behind the general record I am not able to explain. It proves, however, that a single colony is no true index, and that there are many and complicated influences to contend with. I hope, another season, to follow up the study in a more thorough manner.

Loveland, Col.

GENERAL CORRESPONDENCE

FACING HONEY.

Marking Cases Heavier than they are; Section-holder Arrangement Ahead of the T Super; Rate of Section-cleaning; Fence and the Width of Cleats.

BY I. S. TILT.

I do not know to what extent the facing of honey is practiced as stated in GLEANINGS, page 83, by Mr. Aaron Snyder; but I do know that it is the case to some extent, at least, and that by producers too. I buy quite a lot of honey each year, and I have often noticed that it seems to be comparatively easy for some people to do this wrong act. I always make it a rule to examine, and grade roughly before buying, so as not to get "left." When I grade honey I try to put a good average comb to the glass. I have had only one complaint about honey not being as I represented it. The man wrote me, asking what he should do with it when he received it. I have been told that this man makes a practice of playing sharp. I presume he thought that I had no other place to dispose of it, and would be compelled to sell it to him cheaper than he had bargained for it. It is needless to say that I did not gratify his desire. The man I sold it to afterward thought it was the prettiest he had ever seen.

Another evil that often crops out is that of marking the case heavier than it actually is, so as to get pay for more pounds. I noticed a case of this kind in Detroit last fall at a retail grocery that I visited. The case was marked 2 lbs. heavier than it actually weighed. I do not know whether the commission man or the producer was to blame for this; but I rather believe it was the latter.

It is rather queer that men should vary so greatly in their opinions, as is the case with Dr. Miller and Mr. Niver in regard to the T super. I have used both the T super and section-holders; and as I used the former before I knew any thing about the latter it seems that I ought to be accustomed to the T super, and I prefer to use it, just the same as Dr. Miller has done; but as soon as I gave the section-holders a trial I quickly decided in favor of them. I suppose it would not do for us to all think alike, because, if we did, new things would not be invented very soon. If we all thought alike we should be like the Indian who said that, if all men were of the same opinion, they would all want his squaw for a wife. But say, doctor, had you not better throw up the sponge and confess to E. R. Root that the section-holder arrangement is best?

That is pretty big work mentioned in a Straw on page 80 of GLEANINGS, where the women could clean 1200 sections in a day. I confess I am capable of cleaning only about 150 in a day. But there may be some difference in the sections as to the amount of propolis, and probably I take more pains with them than I need to.

I think that Mrs. Axtell's 1500 sections cleaned in a day by 20 women would be a little nearer what most people could do, and do it right. To be sure, we shall have to make some allowance for talk when that number of women are together. As I am obliged to hire some help to clean sections I should like to ask Dr. Miller confidentially whether that woman is single or married.

There is one point about the fence separator that I can not see into. I have never used them, but it seems to me there must be a mistake in its construction. I refer to the cleats across the fence. For instance, the three center cleats are ½ inch wide, as made by The A. I. Root Co.; and as the two sections coming in contact with the cleats are only ¼ in. thick, there would be ⅛ inch projecting past the edge of the section on each side. Now, I do not see how the bees can finish the comb under these cleats level with the rest of the comb. I will try to explain more fully what I mean. The cleats on the fence are $\frac{2}{12}$ inch thick, which would let the comb retreat $\frac{1}{12}$ from the edge of the section, as I find by measurements that ¼ is the space a bee requires to work in. Now, the way I see it, this space, namely, $\frac{1}{12}$ x ⅛ inch, is not large enough for the bees to get their heads into to finish it level, and consequently they will have to leave a furrow or attach the comb to the separator-cleat. Why not have the center cleats on the fence just the width of the two uprights of the sections—namely, ¼ inch wide? As my ideas in regard to the fence are only theory, I should like if some one would explain this point from actual practice.

Filion, Mich., Feb. 7.

[I "smoled" another big smile when I read what you say about the comparative merits of the T super and section-holder arrangement. Dr. Miller, encouraged by the friends of the T super, in a recent letter, finally made bold to fling this question into my face: "I do not remember to have seen mention of many cases in which section-holders were preferred by those who had had considerable experience with T supers. Do you know of one case?" That last sentence rang in my ears. "Yes," I said, "I know we have had lots of them." Turning to Mr. Calvert, who sat near, I put to him the same question. Said he, "We have had *hundreds* of them." My other brother-in-law (the newly made one), Mr. Boyden, whom I approached in a like manner, and who did not know Mr. C.'s answer, gave practically the same answer; but not one of us could remember a specific case. After writing to Dr. Miller to that effect, then came along this article of Mr. Tilt's; and I presume I should not have remembered even this had not the doctor fired that "one case" at me.

I should really like a show of hands from those who have tried the two arrangements. Be sure to give your exact preference, without trying to favor the prejudice or opinion of the editor, nor of that other editor, Dr. Miller.

As to your question regarding the fences and the width of the cross-cleats, we debated that question for a considerable time. One class, among whom was Mr. Danzenbaker, urged making the cleats only ¼ inch wide; another class, among whom was Miles Morton, and his brother-in-law Niver, insisted that ¾ inch was nearer right. We finally compromised by adopting ½ inch, because in practice there is more or less end play, and it is desirable to have the edge of the section entirely covered.

So you do not see how it is that the bee can make the face of the comb level clear out to the uprights of the sections. Neither can I. If the cross-cleats are ¾ inch, the face of the comb will take a dip under the cleats. If it is only ½ inch, it will take a dip under, but only about ⅛ inch from the upright of the section. One object of this is to make it easier to cut out the comb with a caseknife.—ED.]

NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

Coggshall's Method of Extracting; his Kind of Extractor; Preparing the Combs for Winter.

BY E. R. ROOT.

In our last issue I told you something of Mr. Coggshall's method of opening hives, taking out the combs, and carrying them to the extracting-house. I have already stated that the building or structure that he uses at all of his out-yards is a cheaply built affair, and is not made with any reference to being bee-tight.

As soon as the hand-cart was loaded it was drawn to the honey-house and the supers of combs were piled up one on top of the other.

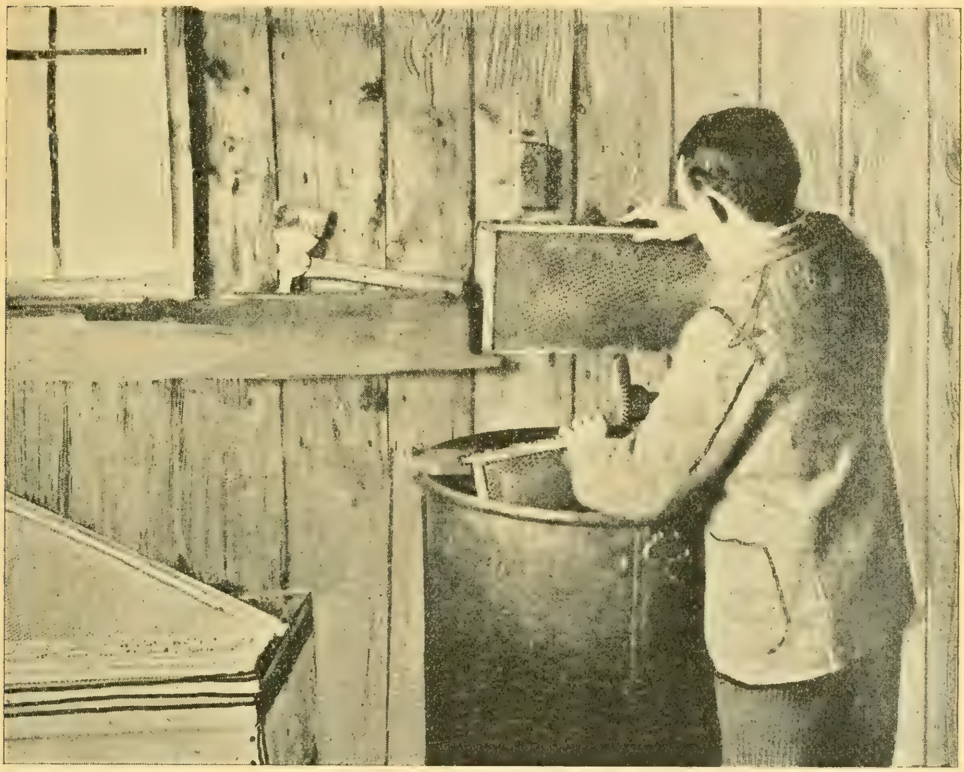
As was to be expected, robbers were flying all through the building, nosing into every thing, especially into combs, and about every minute one would strike the reel revolving in the extractor, and then be thrown by centrifugal force against the side of the can. These, together with the robbers already on the combs, rattled against the sides of the can as they were thrown out with the honey. Of course, the surface of the honey in the extractor was covered with dead or struggling bees, and these extended to the depth of an inch or more into the honey.

I asked Mr. Coggshall if he used any strainer. "Don't need any," said he. As the bees were lighter than the honey, they would float; and when the honey (and swimming bees) reached almost to the reel of the extractor the operator stopped a moment, placed a pail under the extractor-gate, and drew it down pailful by pailful, and emptied into the half-barrel. I watched very carefully, but I could not see a single dead bee in the honey so drawn off. After a day's extracting, or perhaps half a day's, there would be from two to four inches of dead bees in the honey. The liquid portion is drawn off through the honey-gate below, and the dead bees—well, I don't just remember what was done with them; but I think that, after they got through extracting, they were taken out and "dumped" to be cleaned by the bees.

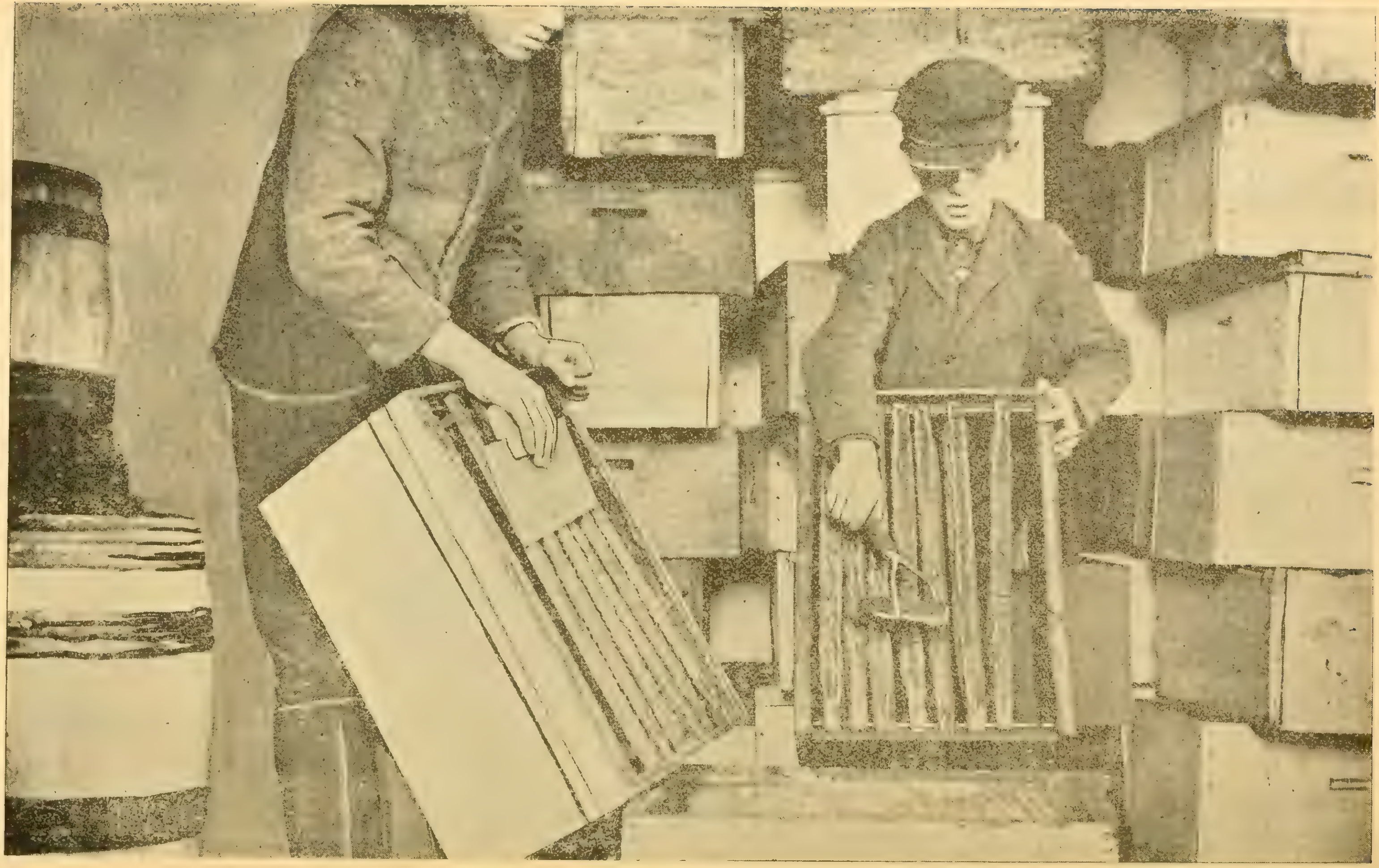
Mr. Coggshall probably loses, I should say, anywhere from a quart to a peck of bees at each extracting. But that does not matter. "Why," said he, "I can raise bees for fifty cents a colony; and the cost of trying to save those few bees by constructing a bee-proof building, and working slowly and carefully enough to avoid robbers, would amount to a good many times more than the value of the bees."

Mr. C. makes use of a four-frame non-reversible extractor of his own get-up. The Langstroth frames, instead of being put down *endwise*, are set into the machine just as they hang in the hives; and instead of putting combs into a reel, one on each of the four sides, the combs are placed in the machine in pairs, the two pairs being opposite, and each comb of a pair separated off by a sheet of tin as large as the comb. This, of necessity, places two combs nearer the center of the reel than the other two. I told Mr. Coggshall it seemed to me that the outer ones would be better extracted.

"Well, see if you can see the difference;" and although I looked over quite a number, the combs seemed to be about all equally well extracted.



COGGSHALL'S EXTRACTOR AND THE METHOD OF INSERTING COMBS.



COGGSHALL'S EXTRACTING SUPERS; SCRAPING OFF THE BURR-COMBS.

"But is it not true," I said, "that the end of the combs, being further away from the center, are extracted cleaner than those in the center?"

Again I was requested to look over the combs once more; and, greatly to my surprise, there was no difference that I could detect.

"There are a good many things that are plausible in theory," said Mr. Coggshall; "but here is a case where theory and practice are decidedly at variance."

"But why do you want to put the combs into your extractor just as they are in the hive? It necessarily takes a bigger machine," I said.

"You watch the boys extract," said Mr. Coggshall.

The man who was operating the machine would pass his forefinger between a pair of combs in one of the supers, grasping them along about the center of the top-bar. On removing these he would grab another pair in the same place with the other hand. The first pair would then be set down on one side of the reel, one on each side of the tin partition referred to. The other handful was set down on the other side. The machine was then given a few vigorous turns, and the honey fairly rained against the sides of the can and the tin partition between the two pairs of combs.

"Now," said I, "if you had a reversible extractor you would save time. You have got to go to the fuss and bother of picking up these combs by hand, and turning them around t'other side to."

"Just watch," said he.

The operator pulled both sets of combs out of the extractor, using one hand for each pair, or, when it was more convenient, one comb to the hand. Instead of turning the combs around t'other side to, they were kept in the same relative position, and made to trade places. Just how this is accomplished is set forth more plainly in the engraving shown herewith. You will notice that one comb (or two, as the case may be) takes a jump over the other, so that the *same side* is kept toward the operator all the time. When the combs are regular, and but few burr-combs, they are picked up in pairs, and transposed in pairs, so that, while the extractor is not reversible, it secures results almost as rapid as the reversible machine. Mr. Coggshall thinks it even more rapid; but I can see how an extractor can be made on this principle, and be reversible. The cost of the machine might be a little more; but the time saved in "jumping the combs" would be considerably economized.

Mr. Coggshall is very certain that he wanted the combs to hang in the extractor just as they hang in the hive. Said he, "In the case of the ordinary extractor it is necessary to take the combs out of the super by the top-bar with one hand. The other then takes hold at the end-bar, after which it is set down into the extractor. As soon as the combs are extracted, the same operation is gone through with again, only the method is reversed. By my plan I pick the comb up by the middle of the top-bar and set it into the machine, *without changing the grip.* This allows me to pick up four combs at a time, two in each hand. By the other plan *one hand must assist the other* to get the comb in position so it can be inserted in the extractor."

I must acknowledge, although I do not want to, that there is a good deal of logic and good sense in what Mr. Coggshall has to say; but before I would be willing to give up that he can work faster than ordinary bee-keepers can with the ordinary reversible machines, I should like to see a trial test made.

Well, after the combs are extracted they are set back into the hive-supers, and stacked up in the extracting-house, as shown in the large cut — that is, providing this is the last extracting; if not, they are set back on the hives. At the time I visited the yard it was at the time of the last extracting in the season, and the supers were piled up as shown. Of course, the combs mere wet with honey. But that made no difference. When the men are gone, the bees are allowed to have their own sweet will—that is to say, they crawl through those cracks and crevices in the building, make their way to the combs, fill themselves up, and make for home. Of course, it necessarily makes an uproar of robbers; but that makes no difference, for the yard is a good way from any human habitation, and the bees simply have *a glorious old spree in cleaning things up.*

The illustration shows the method of cleaning the burr-combs off at the end of the season after the combs have been cleaned by the bees. Two forms of scrapers were used, and the method of use is explained by the illustration.

Mr. Coggshall uses thin top-bars, I think principally because he has thousands and thousands of such combs, and can not afford to make the change. Then I am rather of the opinion that he believes burr-combs make "ladders" from one super to another. At the end of every season, boys go around and go through the operation shown in the engraving.

The marketing kegs and barrels are shown on the left. They are made of cypress, and for the York State market they are just the thing.

PLAIN SECTIONS AND FENCES.

Doolittle's Criticisms; Counting the Cost.

BY G. M. DOOLITTLE.

Question.—I have 100 colonies and surplus arrangements, using wide frames to accommodate them. Would you advise me to throw these one side and adopt the plain sections and fences spoken about so much of late in GLEANINGS?

Answer.—I have read with great interest what has been said during the late past, regarding the plain sections and fences, but must say that, so far, I have failed to see any *good substantial* reasons why *all* bee-keepers should adopt them, but, on the contrary, I think I do see good reasons why all bee-keepers, who have every thing arranged for securing surplus honey with the old-style sections and separators, should keep on in the "even tenor of their ways." First among these reasons is, the cost required for such change. After making a careful estimate, I am confident it would cost me fully $100 to make such a change for my apiary, and I should have to think some time, and also carefully try the plain sections on from two to five colonies, before I would consent to harbor the idea of making such a change. It is estimated that there are 400,000 bee-keepers in North America, and to give a little idea of what the cost would be, were *all* to make this change, I have figured it this way: We will allow that three-fourths of this 400,000 either use the plain sections, or are not up with the times, and these latter would not adopt any of the modern improvements of any kind. This would give us 100,000 bee-keepers who *should* adopt the plain sections, if it is advisable for any one to do so. Now, to be under the cost, instead of over it, we will allow that the average cost would be only $10 to each of these 100,000, instead of the $100 I estimate it would cost me. At this very conservative estimate, the cost would be $1,000,000 to the bee-keepers of the land. Does any one see where enough gain could be made to compensate for such an expense? I confess, I do not. If we are to change to every thing which has a boom, as the plain sections are having now, we shall be like a bee-keeper I know of, about whose apiary are piles of cast-off stuff, piled away in fence-corners and out-of-the-way places. These things, which cost him hundreds of dollars, are going to decay, and are a dead loss; but he keeps on changing and changing, while his family goes poorly fed and clothed, that he may keep up with every new (?) fad that comes along. Then who is to be benefited by a change from the old-style section to the plain section and fences? It is represented that it is to be the bee-keeper. Will some one tell us how? when? where? and in what? Give us the proof and we shall be satisfied. "Well, the section will be filled fuller," says one. For the time being, I will admit this to be so, although I doubt it, where the right management is adopted. But if they *are* filled fuller, is this a benefit? Which sells the most readily in market—the full, heavy sections, or the lighter ones? Perhaps it may ease Dr. Miller's conscience a little to fix the retailers so they will have no 14-ounce sections to sell by the piece when they bought them by the pound; but Dr. Miller, and every one else who has had any experience along this line, knows that the lighter sections sell for the higher price. As proof I will say that, last fall, I assorted my sections as to weight, making certain cases, of 20 sections each, weigh 19, 20, and 21 pounds respectively. The result was, when returns came in, that those cases weighing the 19 pounds sold so as to net me a trifle over one cent a pound more than did those weighing the 20 pounds, while those cases weighing 21 pounds brought me a trifle less than 1½ cents per pound than the 20-lb. case. Hence the lighter sections brought me about 2½ cents more per pound than did the fullest ones; and yet I am told that it is to my advantage to adopt these plain sections because the bees fill them fuller, leave no peep-holes, etc. "But," says another, "they look better." Again I ask, when? where? and to whom? "To the producer," says one. Admitted, providing said producer is infatuated with *plain sections;* but if not, he considers that his old-style sections look the best. I showed the "frontispiece" in the January *Review* to Mrs. D., in which were pictured four plain sections, and four of the old style (she not being familiar with the discussion going on of late), and asked her which of the eight she would choose, to set before the choicest company she might chance to have, and she immediately chose one of the old-style sections which Mr. Hutchinson would have us believe was not as nice as the new style. When asked why she chose that one instead of those having no peep-holes, and which had the honey coming to the wood all around the section, she said that, with the no peep-hole in the sections, the honey would be set to dripping in cutting out, which would make the cake of nice comb honey less inviting by the time the company got to the table; that it was much more work to properly cut such a comb from the section, and, unless very careful in disposing of the section, honey would be daubed over things generally, from the dripping that would be necessary where honey was placed by the bees next the wood all around the section. Besides, there would be considerable time wasted in scraping all the honey off the wood to the section, or else quite a waste of honey, if not scraped off. To all of which I could respond a hearty amen, after having cut the honey out of many a section.

I claim, and have always claimed, that there is no handsomer-looking section of honey than the one whose comb is built out plump and nice, with a border row of empty cells completely around it. And I also claim, under the present wants of the public generally, such a section of honey is more profitable to the producer (from its selling price), and more acceptable to the consumer for reasons given above.

"But does not friend Niver sell these plain sections for a greater price than he does the old style?" I presume he does; but let me whisper that *Niver is a salesman;* and were it the plain section which had always been in use, and the old style that Niver had just become infatuated with, he could find more points in the latter to urge in its favor to customers than he now finds for his plain sections; hence he would sell the old style for the better money. Therefore, when told that the plain sections sell better, I always ask, "Who says so?" Does the price obtained in open market, without any pushing of this style above the old style, say so? Until it does, the claim falls to the ground.

"But," another says, "the plain section is an advanced step." Again I ask, wherein? Do you see those cells all along the tops of some of the sections whose capping has been pressed down so it touches the honey, or have had their capping broken till the honey is oozing out and running down over the nice face of the comb? Is it an advanced step which causes us to use every precaution in handling our sections after they are filled, if we would avoid marring the faces of the pretty combs, either by our fingers or hitting one section against another, and that obliges us to put separators into our shipping-cases lest the sections slip by each other *just a little bit*, thus setting the honey to running? It seems to me that, the more such advanced (?) steps we take, the worse we are off. I can not think that the advocates of these plain sections have fully looked into the matter in all its bearings, or they would have seen some of these defects and told us about them.

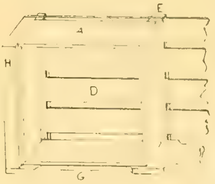
In closing, let me advise those who are contemplating going into plain sections, or, in fact, any thing else they have never tried, to go *slow*. Never go into any new thing (*to you*), except on a small scale, trying it on a hive or two at first; then if it proves *good* in your hands gradually work up to where you can use it in the whole apiary. And should it prove against your wants and desires in your first trial, you will have expended but little, and can "throw it up" without cost, save what will be overbalanced by the knowledge gained by the experiment.

Borodino, N. Y.

[The article above should have appeared in our issue for March 1; but in some way it was misplaced after it reached here, and was not discovered until the journal had gone to press. After looking it over it seemed to me that Mr. Doolittle had shot clear over the mark, and therefore I wrote him, stating that I could not see *how* he figured that it would cost $1.00 per hive to change over to the fence and plain section; that we would agree to equip his supers with fences to fit his wide frames at a cost far below what he figured; namely, that we would furnish fences for his wide frames at $16.00 per 1000. We put the estimate high because his wide frames are odd-sized. We are furnishing fences for our section-holders, made to take the old-style bee-ways, at $10.00 per 1000. I further stated that it was not necessary for him to discard his wide frames. In reply he writes as follows:

> I see you think I made a miscalculation as to the cost of changing from my present surplus arrangement to the "fence equipment." Perhaps so, yet I do not see it. You figure the cost of the fences at $16.00 per 1000. I figure that I use 25 wide frames to the hive, which, with tin separators, cost me 4 cts. each—$1.00 a hive—$100 for 100 hives. If I adopt the fence I must throw away these, hence throw away *cost* to the amount of $100, as the separators can not be used, nor can the wide frames (although you assume they can); for did I use the wide frames they would be too wide, so would give too heavy a section. Then, did I tear the separators from them and cut down the width ¼ inch, the work of doing so would be worth more than to buy new wide frames. Or do you claim that I should not figure the past cost? If so, then it would cost an established bee-keeper no more than it would a beginner, to start with the new equipment. If, as I claim, the fence arrangement is no better than what I am now using, should not the *cost* be counted as I have figured it, rather than on new fences?
>
> About a less cost of shipping cases: We do not agree here either. When you come to take into consideration the warping of lumber and the carelessness of many in nailing, safe shipping of honey with the plain sections will necessitate separators for the shipping-cases; and these and their adjustment will more than make up the saving in lumber over the old style. I may be wrong, but this is the only way I can see it so far.

Friend Doolittle still fails to catch on to the fact that it is not necessary to discard old appliances to take the new plain sections and fences. The only thing that is cast aside is the old-style *separators*; and if they are of wood, as they are in the majority of cases, this last is nothing, comparatively speaking, as many of them would have to be replaced anyway. Mr. Doolittle figures 25 wide frames to the hive. This is allowing for pretty nearly 100 lbs. of comb honey per colony. He certainly put the figure high, and I do not believe the ordinary bee-keeper will secure more than 50 lbs. on the average, if he does that; and, besides, if he secured more he could use some of his wide frames over again. As he makes his wide frames the basis for 100,000 bee-keepers, I think it would be fair enough to cut down the amount to 50 lbs. per colony, or make 12 or 13 wide frames per hive. Well, say that we use 12 fences per hive. These would cost 20 cts.; if we figure on 25 wide frames the cost would be 40 cts. Now, let me assure Mr. Doolittle that this will be the total cost per hive, as I figure it, to equip his supers for plain sections, for he would not have to discard his old wide frames. Indeed, we will enter into contract to so equip his hives (on the basis of 25 wide frames) for 40 cts. per hive. Perhaps I can best show *why* the wide frames need not be discarded by showing the cut of how we equip our old-style section-holders for old-style sections. It is true, the plain section, as shown by the cut, is a little narrower than the section-holder; but this difference in width is taken up by the *cleats* on the fence. A careful scrutiny of the engraving will show, I think, how this is done. Perhaps I can explain it in another way by saying that the cleats on the fence simply take the place of the openings, or, rather, the extra width of the old-style sections. I think friend Doolittle will readily see that his wide frames do not need to be discarded at all, much less would he need to trim them down. But suppose he had to discard them, we would contract to furnish him enough for 100 hives, including tin separators, at a price of 2½ cents apiece, instead of 4 cts. as he figures it. The new wide frames and the new separators, all clean and nice, would be better than the old separators and wide frames by just about the difference in cost of nailing up.



In regard to shipping-cases, we will agree to furnish shipping-cases for plain sections, to hold a given number of pounds of honey, for less than we will furnish cases for the same weight of honey for slotted sections.

Speaking of prices reminds me that I talked with Mr. Niver on this very point. He sold both old-style section honey and Morton honey. For the latter he could get better prices every time.

I have shown that picture we reproduced from the *Review* to a dozen or so persons—people who do not know a bee from a mud-wasp, much less the merits of the discussion that has been going on; and without an exception they have pronounced in favor of the plain section. But Mrs. Doolittle does make a point when she says the honey in the old-style section will cut out in some cases without dripping, when in the plain section the knife would cut through the honey. This may or may not have weight; but if it does I will guarantee that, by the change of the fence slightly, we can cause the honey to be filled out in the same way exactly, *if* it should be thought desirable; but the fact must not be forgotten that the honey in the plain section, as shown in the *Review*, would ship far better than that in the old style. The great problem for years back has been how to get the bees to secure their combs to the sections better. If I am any judge of what I have seen, the fence goes a long way in solving this problem.

Mr. Doolittle's closing caution, however, is a good one. I have reiterated the same thing in our own columns over and over again. I know of one bee-keeper, for instance, in York State who has changed his hives and his styles of goods almost every two or three years. He is too independent to follow in the wake of the supply-dealers, and has, therefore, made things to suit himself. He could show one piles and piles of stuff he has discarded for something he considers better; but he has never made the money that another man that I know of has—Mr. Coggshall, for instance—who uses all sorts of hives and frames. Almost "any old thing" is good enough for him. He numbers his colonies by the thousand, and his crops of honey by the hundreds of thousands of pounds; and his bank account—well, most men would feel independently well off.

But there is a golden mean in all things. When it comes to discarding hives we should go slow; but when, at a very slight expense per hive—say 10 or 15 cents—it *seems* as if we could get it back and more too then it is well for us to consider and test. I firmly believe that nothing in all beedom has yet been brought out that promises as good returns for the investment as the fence and plain section; for it is evident that plain sections will be and *must be* sold for less money than the slotted sections could ever be sold for. *For years bee-keepers have been squandering money for the bee-ways in their sections;* and if Mr. Doolittle would consider this one point, he would see that his big figures would in a year or so go clear on the other side of the column. Suppose next year plain sections are sold at 25 cts. less per 1000. One can readily see what a saving it would effect in time. Let's figure: If 100,000 bee-keepers, on the average, order 5000 sections, this would effect a saving of *one million two hundred thousand dollars per year.* Now, add to this the saving in the shipping-cases, the saving effected by the better shipping of combs built solid to the sections, and the figures would be enormous. But a long array of figures is misleading. Let's test the matter, each one for himself.—Ed.]

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DEEP VS. SHALLOW FRAME HIVES.

BY J. E. HAND.

While I am aware that the subject of deep vs. shallow frame hives is a much-mooted question, and while I do not wish to open a discussion on this subject, yet in an experience of six years with a frame 4¼ inches deep inside, side by side with deep frames, I have been forced to the conclusion (rather against my will) that very many of the points of superiority set forth by the advocates of the deep frame exist only in theory, and will not prove out when put to the test side by side in the apiary. Especially is this true of wintering. The deep-frame advocate will bring forth "bushels of theory," setting forth the superiority of the deep frame and the cubical form of hive which is so well adapted to the shape of the cluster, and gives so much better protection, etc. This has been harped on so much in the bee-journals, and looks so reasonable, that many have been led to follow this blind reasoning, to the detriment of their honey crop; and I must confess I have been one of this number. I considered it a calamity whenever I was obliged to winter a swarm in a single section of my hive, which contains eight frames, 4¼x17 inches of comb surface. It was so contrary to my preconceived ideas of what the shape of the brood-chamber should be to afford the best protection during winter; but, contrary to my expectation, these swarms invariably winter well, and after repeated success in wintering in these shallow hives I was forced to yield the point, and I intend hereafter to winter all my bees in these shallow hives, on summer stands, with winter-case packed with chaff.

I have no theory to bolster up these facts, nor do I wish any. Years of experience along these lines have led me to the conclusion that, all things being equal, it makes very little difference in wintering whether the brood-chamber is deep or shallow, round or square. The *difference* will be in the bee-keeper's pocket-book at the close of the honey-flow. It rests with every bee-keeper to decide for himself whether or not this difference is in favor of the deep or shallow frame.

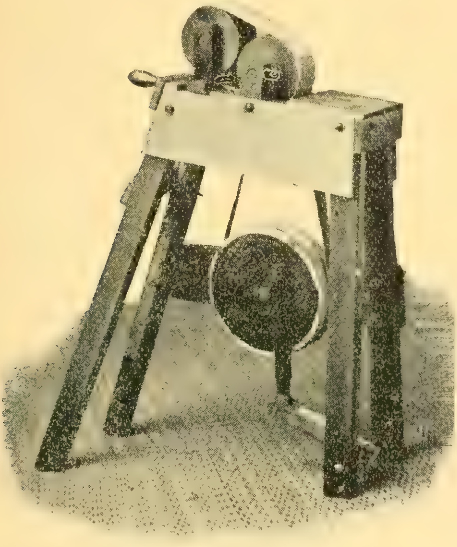
[The time was when it was thought that deep frames would winter bees better than the shallow; but in late years it is getting to be more and more apparent that, with the same management and same protection, one frame would give as good results as the other. I do not believe there is any one with any kind of frame who can show better results than we can with our Langstroth; and I see no reason why we could not obtain equally good results, even if we were using frames 4¼ inches deep. One trouble with the deep frame is that the bees will eat away all the stores next to the top where it is the warmest, and the bees sometimes die because the clusters are left high and dry.—Ed.]

GOLDEN'S LATEST SECTION-CLEANER.

Some Essentials of Construction; Sandpaper on a Solid Disk Not as Good as Sandpaper on a Yielding Belt.

BY J. A. GOLDEN.

Referring to your footnote, I did not expect my section-cleaner to be made like a sewing-machine. I have made a rough machine to show the bee-keepers about how they may be constructed, and surely they can be made quite cheaply at the factory. This one is made all of wood excepting about 16 bolts; wheel, mandrel, and all. The base-apron which the back roller rests on is a 1½-inch board 4 inches long, and as wide as the space between the top boards. Two holes are bored, one on each side, and uprights put in for the back roller to revolve in; opening at top is to admit roller-mandrel. Two strips are tacked on side boards, inside, for this board to slide on. A hole is bored through lengthwise, and a wooden screw, or iron, as you can see in the picture, to tighten or loosen the belt, is used. This is a little different; but the wheel set down on a slide would be the easiest. There could still be a more simple and cheaper machine than even this constructed.



I have received quite a number of letters from bee-keepers and honey-dealers, complimenting me in regard to the wheel device—Doolittle, Dadant, and others.

You seem to think you have something that will outshine all others. Well, I will insist on your trying the belt alongside of a solid-surface disk or wheel. You can dab a section on a belt, and not even jar the comb; but on a solid surface you must be very careful.

Reinersville, O., Feb. 11.

[I have no doubt, friend Golden, that the belt will prove superior to the disk; but my idea was to develop a cheap machine that everybody can have. Where one has a large number of sections to clean, say fifteen or twenty thousand, it would pay him, no doubt, to have a section-cleaner something like what you have shown us in the photo, even if it did cost ten or fifteen dollars. But, friend G., you have not yet told us whether there is any difficulty about propolis filling up the sandpaper; neither have you told us whether it is better to clean the sections in cool weather than in warm. In your next, please enlighten us on these points, and then tell us whether coarse, medium, or fine sandpaper should be used.—Ed.]

ONTARIO CO. BEE-KEEPERS' CONVENTION.

Different Pollen Substitutes; Feeding Milk, etc.

BY F. GREINER.

There were some interesting subjects discussed at the Ontario Co. bee-keepers' convention last month, and some points were brought out that may be of value to many others; so I will make the attempt to present some of them — perhaps enlarge upon them — as the spirit may move.

Mr. Perry, of Bristol, gave it as his observation that it is not always the colonies numerically the strongest that gather the most honey. He ventured an explanation of this peculiarity, saying that it might be possible for a colony to rear too much brood, more than they could feed, and that thus the individual bees would not have the vitality, longevity, and general business qualification — yes, not even the size — that bees do from other colonies that were fed more plentifully. The main trouble might lie in the lack of enough pollen.

The discussion on the subject drifted this way and that. It was suggested that, if there were an insufficiency of pollen, a proper method of feeding might obviate the trouble. Prof. F. Benton made mention of the prevailing custom of bee-keepers in Germany, who save up great quantities of honey and pollen for feeding by the unique way of throwing the honey and pollen-containing combs into a big barrel or hogshead, pounding them down, filling in more, pounding down again, continuing in this way till the receptacle is full. Sometimes they keep such honey over for years, and always have a lot on hand for an emergency, regulating the quantity according to the number of colonies they keep. This feeding-honey is harvested every fall by "taking up" the colonies not having sufficient winter stores. It is as salable and as valuable as any other kind of honey. I think that, if Mr. Perry had such honey to feed to his bees, perhaps they would all have as vigorous constitutions as he could desire.

Mr. Chester Olmstead kept the bee-keepers of the convention in suspense for a while by his statement that he had fed pollen to his bees, and found it to be an excellent stimulant. Bees fed on it had outstripped the rest of his bees. He had laid up quite a supply for the coming year.

Some speculating heads began to suspect that perhaps Mr. Olmstead was running some sort of pollen-gathering institution in opposition to the bees, perhaps even gathering honey. Finally he, in an unselfish manner, disclosed his secret, saying that he had gathered the pollen with his own hands from the corn-tassels by going around in the field with a boiler-cover, holding the same beneath the tassels, giving them a vigorous shake. A portion of the dislodged pollen would, of course, land on the cover. Thus he had proceeded, and gathered, I think, two gallons of the pollen, which he had mixed with honey and put up in cans for future use. Mr. F. Benton suggested keeping the pollen in the dry state.

It might be well for bee-keepers not to overlook the fact that Mr. Olmstead had found it very profitable to feed his bees on this self-gathered pollen, and that the German bee-keepers practice a similar method. All bee-books and other instructors advise stimulative brood-rearing by feeding small quantities of honey or syrup; but less frequently do we hear of feeding pollen or any substitute. There can be little doubt that a great deal could be gained by doing so in some instances. For localities that furnish little natural pollen early in the spring, it might prove a grand thing. Of course, flour is sometimes offered to bees; but in the manner it is offered, it is laborious for the bees to gather it up, moisten it, and pack it into their pollen-baskets. The weather is unfavorable, oftentimes, and then the bees can not profit by it.

It may not be known to all, but for a great many years Rev. Wygant, of Flacht, Germany, has very successfully used wheat flour and honey, in the proportion of 1 to 10 or 15, which mixture he poured into drone-combs and inserted these into his hives next to the brood. Whole-wheat flour contains all elements necessary to sustain human life in a well-proportioned order. According to the analysis I have, it is not so very much different from pollen. It will, therefore, make a very good and cheap substitute. Mr. Benton recommended pea flour as the very best of all cereals. Would it not be well for many who are concerned in this stimulative feeding to give this flour-and-honey mixture a trial? Wygant says a quantity of one or two quarts may be given at a time to a good populous colony, as the mixture will not readily ferment. In this respect it has the advantage over the milk-and-egg food, which was also mentioned in our discussion, but not fully discussed. As there was a desire manifested to bring this milk diet before the bee-keepers in some of our journals, give exact formulæ, etc., I take this opportunity to give an extract from a long article on the "proper use of milk as a bee-food," which appeared in No. 7 of the *Bienen Zeitung*, 1897, from the pen of Emil Hilbert, the originator of the egg-and-milk diet. For more than 25 years Mr. Hilbert has practiced this, and, of course, has discovered certain facts in regard to it. These, as I find them in the article, I will now give as briefly as possible:

> Stimulative feeding with any kind of food is like a double-edged sword in the hand of the careless and inexperienced. Especially is this so with the milk-and-egg preparations. One should know the exact wants and needs of his colonies, and then supply them. All know that milk and eggs are subject to decomposition—that they easily sour and spoil. If more is fed at a time than can be consumed immediately, it will make trouble. Cleanliness is one of the great essentials.
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> The milk of different animals is not all alike in its composition. Goat's milk differs in composition from cow's milk. Even the milk of two different cows may differ considerably; so we need not expect cow's milk to be exactly like bee-milk (for a sort of milk it is) the young bees, the larvæ, are brought up on. Cow's milk needs sugar to make it a balanced ration for the bees. Feeding sweetened milk does not excite a colony like feeding honey or even sugar syrup; but it had better be done at night. During the day, milk should not be fed unless the temperature is high enough so bees can fly—not less than 55 degrees F. Should the mercury sink below 46 in the evening, do not feed. After having been obliged to omit feeding on account of bad weather, do not resume the practice until the bees have a chance to fly. Bees have not the ability to separate milk from sugar, and for this reason it will not do to feed alternately honey, then milk, for they would store it mixed in the cells. The feeding of milk must be suspended as soon as honey comes in above the immediate needs of the bees, for the same reason. The storing of the sweet milk must be prevented by all means. Every colony fed with milk ought to have an abundance of sealed stores. Strong colonies are better suited for it than weaker ones. Strong colonies can be made to just boom. Feeding milk puts them in good condition to build comb.
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> The milk should be fed warm—about 76 degrees F. The bees will take it up quicker, and have the benefit of the warmth besides, which is an advantage. The food might be poured into combs, and moved up close to the brood; but with every opening of the hive there is always a loss of warmth connected, and this should be avoided if possible. It is best to feed under the brood-nest in shallow tin dishes, using a varnished wooden float. In preparing the food the freshly drawn milk is brought to a boil to destroy all bacteria; two pounds of sugar is added to each quart of milk, although, after the bees get used to this milk food, the amount of sugar may be gradually decreased to half that amount. If less sugar is used, the bees refuse to take the food. Sugar is better suited for sweetening the milk than honey. The slight degree of acid in the latter curdles the milk. The sugar will dissolve better in the hot milk when first moistened with hot water. After the sugar is all dissolved, bring the mixture again to a boil, and skim. If a little salicylic acid is added to the milk, say as much as a pea to a quart, decomposition will be greatly retarded. The acid will have to be dissolved in half a thimbleful of alcohol, and a spoonful of boiling water before adding it to the milk; but this addition is not strictly necessary.
>
> Milk should not be fed until the bees are active in the spring, perhaps in April. Begin with one-twentieth to a tenth quart once a week, according to strength of colony; increase to two feeds per week. When, during the latter part of May, a colony has nearly reached its maximum strength, occupying about 10 L. frames with brood, the amount of feed may then be as much as one-fifth quart, two or three times per week. To feed more or oftener is not profitable but dangerous. Foul brood is sometimes hinted at as the result of imprudently feeding milk or egg.

Thus far from Hilbert.

Wygant thinks it best to add to the milk some wheat flour in order to make the food more the consistency of the milky bee-food or the royal jelly. No doubt this feeding of bees admits of considerable variation. Some years ago, before I had had any experience with bees except, perhaps, that I had hived a very few swarms for some of my neighbors, I was told once by an old fogy bee-keeper that he used to feed his bees pancakes and molasses. I was at once inclined to ridicule the pancake theory; at any rate, I didn't believe it. With the present light I have, *nothing* will surprise me any more. Bees have been said to eat ducks, and I am not sure but also sheep—not literally, of course. But let me tell you, that old bee-master Wygant, mentioned several times before, has fed and fattened his bees, not only on milk and egg, barley and oat soup, on wheat flour, but also on bread and butter and cheese; on potatoes, meat, etc. What are our foods, anyway? Chiefly a composition of the very few principal elements, one differing from the other only slightly in its make-up. For instance, while starch may differ in looks and taste from sugar, the elements they are composed of are about the same. A kernel of wheat contains nearly the same elements as the egg, while the kernel of corn does not; it has a great overplus of heat-forming elements, and in order to make a balanced ration out of it for horse, cattle, swine, or poultry, bees or man, bone and muscle forming elements will have to be added.

Then, again, we take the kernel of wheat and feed it to the hen; the hen converts it into the egg; we take the egg, subject it to incubation, and, presto! the elements formerly contained in the eggshell are changed into meat, blood, and bone; we have a chick; we feed it the kernel of wheat again, and we have the broiler, the roaster, the matured capon.

Then, again, we take the same indestructible, everlasting elements, as they appear to us, in the form of nitrate of soda, or perhaps ammonia, in the potash, in the phosphoric acid; we feed them to the corn-plant; in due time nature changes them into the heat-producing corn, the muscle-producing pollen, and so they go the rounds. The meat that came from the egg was nursed up by the wheat kernel. Let us take it, dry it, pulverize it perfectly, make it palatable for the bee by means of a sweet liquid, and they will eat it and do well on it (they will eat the duck). Or take the meat and convert it into Liebig's beef extract, sweeten it, and the bees will do well on that (they will eat the sheep or the beef).

Take the Switzer cheese, the most concentrated substitute of pollen, containing, I think, 62 per cent of albumen; offer that to the bees in a form that they *can* use it, and they *will*.

At last the potato, the poorest of all the pollen substitutes, who says the bees could not have a picnic over that? Just try it, although the potato contains only 2 to 3 per cent of albumen, but all the more of the starch, which the bees will manufacture into sugar. Boil the potato till it is mealy; mash it and mix it into your feeding-honey or the sweetened milk. They will eat their pudding and milk without asking for even a spoon.

It is a strange world, this world of ours, and yet how simple! In feeding bees we must take into consideration the end to be accomplished. During the winter a colony of bees does not need to build up any new frames, but must keep from freezing; hence very little of the bone and muscle producing food is required by them, but all the more of the heat-producing. Honey will just fill the bill. Just as soon as breeding commences, then they must have the other—the pollen, the albumen from the egg, the milk, the lean meat, or whatever substitute is at hand.

The apiarist of to-day, the farmer, the cook, all ought to have at least a rude knowledge of chemistry or they may ofttimes be wandering in the dark. Let us learn to apply science more in our pursuit of bee-keeping.

I started out with the intention of reporting our bee-keepers' convention, but I drifted ashore. If I succeed in getting the old shell back into deep water I may try it again.

Naples, N. Y.

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THE WISCONSIN BEE-KEEPERS' CONVENTION.

The Good Work of the Foul-brood Inspector, but Hampered by a Lack of Funds; Honey vs. Sugar; Freight Rates, etc.

BY H. LATHROP.

The fourteenth annual convention of the Wisconsin Bee-keepers' Association was held in a room of the capitol, at Madison, Feb. 2 and 3. There were about twenty-five bee-keepers present, including all the officers. We had a good convention and a good time, and believe some important work was done. We are learning to devote more time in our State association to general measures for the good of our industry, and leave more of the A B C work to local meetings and institutes.

One of the first things that came before the convention was a brief report from State Foul-brood Inspector N. E. France. He stated that he had traveled 3800 miles in the discharge of his duties; he found foul brood existing in 27 apiaries situated in several counties. In the majority of cases these apiaries were cured after the first visit by carrying out his directions on the part of the owners. In cases of failure it was invariably caused by a failure to do as directed. Many copies of Dr. Howard's pamphlet, with Mr. France's appendix, giving full instructions for the cure of the disease, were distributed.

Mr. France found many cases of the disease known as "pickled brood," which usually disappeared toward the latter part of the season, without treatment; he does not think it will develop into foul brood without infection. Very fine salt sprinkled over the combs seemed to aid in cleaning it out.

He found a large number of bee-keepers who took no paper on bee culture, and, as a result, often lost money by not being posted on markets and methods. The inspector was hampered in his work by the fact that the appropriation of $500 by the State had to cover all expenses, including transportation. The executive officers were instructed by the convention to apply for free transportation over the railroads of the State, for our inspector, the same as is allowed to other State officers.

The question, "How can bee-keepers increase the demand for honey?" was discussed. Mr. Lathrop advised that bee-keepers set a good example by using more honey and less sugar in their own homes. It has proved its superiority as a healthful food, and can be used largely to take the place of sugar. Mr. Wilcox said bee-keepers would do well to stamp their name and address on each section of comb honey, so that consumers would know where to procure a further supply. This practice was often the means of bringing new customers; but only honey of good quality should be sent out. Much honey may be sold at the bee-keeper's home by having a sign up, "Honey for Sale."

Mr. Winter advised advocating the use of honey through the printed page, and by personally informing the public of the value of honey as a health food. All agreed that the standard of extracted honey should be maintained by extracting no honey until it has been thoroughly ripened on the hive.

The convention voted to make application to the Western Classification Committee to change the ruling in regard to bees in hives less than car lots. At present such shipments can be sent only by express at exorbitant rates. It is claimed by practical bee-keepers that hives properly prepared can be safely shipped by freight; and if a favorable ruling can be procured it will largely increase the sale of bees, and consequently increase traffic for transportation companies.

On the question of making a State exhibit of honey and apiarian supplies at Omaha, it was the opinion of the members present that it was inadvisable. Mr. Wilcox stated that it would require at least $300 in order to make a creditable exhibit. This amount of money we can not raise, as our industry is not yet recognized by our State to the extent that they will make such appropriations for our use.

The convention voted against making such exhibit. The general opinion seemed to be that these great and expensive expositions occur too often in our country at present, and are promoted by a ring of people who wish to make big money out of them.

A resolution was passed, favoring the amalgamation of the North American Bee-keepers' Union and the United States Bee-keepers' Union. The following officers were elected: President, Frank Wilcox, of Mauston; Vice-president, Jacob Huffman, of Monroe; Treasurer, H. Lathrop, of Browntown; Secretary, N. E. France, of Platteville.

Browntown, Wis., Feb. 12.

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"FACING" COMB HONEY.

A Reply to Aaron Snyder.

BY J. B. WILHELM.

On page 83 Mr. Aaron Snyder comes down somewhat severely on farmers, and especially on bee-keepers, as a dishonest class of people. You will always find people in any occupation who do not have a surplus of honesty, no matter where you go; but that is not saying that a majority are so. I have no doubt The A. I. Root Co. buys and sells more honey than Mr. Snyder; and in their comments on his article they say there was no evidence of facing any of the lots sent to them. I saw some of the same honey at their store, but I do not think, to judge by the weight of the cases, that any of the honey was faced. I might, probably, have placed the honey in a different grade; but in the locality where it was produced they would have called it fancy, where I probably would have graded the same only as No. 1. They might have called it "white," and I called it amber; but I can not see how a bee-keeper can place an inferior article of honey in the back of a case without being detected by the weight of the case itself, knowing the number of sections in a case. The most of my honey I have sold in the home market to private families and to the grocery trade; but never have I had any trouble in selling again where I sold before. But often have I been complimented because my honey was so very nice, and asked by some of these wise grocers how I made it so nice and white. My answer would be, "Do you think I was skillful enough to finish or shape such a delicate article as comb honey?" But if such great men as Dr. Talmage make erroneous statements concerning the honey-bee, it may be overlooked with smaller lights such as grocers and consumers of honey who could not distinguish the difference between a bee and a green horsefly.

If Mr. Snyder will look up instructions for barreling apples I think he will find that they all want the end of the barrel faced. But this is not saying that you shall place very nice apples in the bottom and head of the barrel, and fill up the center with knotty and gnarly fruit; this would be overdoing the matter. You can not go into the market in any place and buy apples, peaches, pears, plums, strawberries, or grapes — yes, nor even cabbage — unless it is so placed as to make the best impression to the eye possible. Why, even in nature, in God's own store, you find it so. Look at the fruit on the trees, and you will find the nicest specimens of the fruit where it will attract the eye. No wonder that mother Eve was tempted! I wonder whether she felt toward the Lord as does Mr. Snyder toward bee-keepers.

But, to cap the climax, Mr. Snyder quotes a New York farmer as baling bog hay and wrapping it with good hay so as to sell for first quality. With the baling-presses used now it is an impossibility to bale hay in such a manner but that every forkful fed to the press will show. With the old presses used thirty or forty years ago you might have done such a thing; but the cost would have overbalanced the profit. I should be as safe in offering $1000 reward for baling bog hay, and facing or wrapping the same so as to sell for choice or No. 1 timothy, as is Mr. A. I. Root in offering $1000 for a sample of comb honey made by man equal to that made by the bees.

Now, if some people will read Mr. Snyder's assertions they may have reason to think that the majority of bee-keepers, farmers, and fruit-raisers are rogues and thieves. How could they doubt it? Here it is, black on white, by a bee-keeper himself. A little more charity in your next article, Mr. Snyder, and not such sweeping assertions.

St. Stephens, O.

[I do not think, friend W., that Mr. Snyder really meant to say that bee-keepers are a dishonest set so much as he desired to stir up discussion. He not only stirred up discussion, but he stirred up a bees' nest of bee-keepers. As I said at the time, I think it would do no harm to have the subject ventilated. From present indications it would appear as if, when honey is faced, it is with no intention of deceiving, but simply for the purpose of making a display. With regard to the baled hay, no doubt you are right.—ED.]

ACETYLENE GAS.

The Nature of it; Conditions that will Cause Dangerous Explosions.

BY C. H. DIBBERN.

So much has been written of late, and so many statements have been made that are misleading, if not absolutely dangerous, that we have concluded to give a disinterested statement of our experience.

About four months ago, after reading Mr. A. I. Root's account in GLEANINGS, we decided to put in a generator for lighting our store, wishing to use about twenty jets. We corresponded with various parties manufacturing generators, and found there were quite a number of them, usually each claiming to be the very best, and the other fellow's contrivances were either unsafe or of no account. After investigating matters a while, and comparing the merits and prices of the different generators, we decided on one having about double the candle power we were likely to use. We consulted the insurance companies, and found they insisted that the generator must be placed at least 50 feet from the building, although the manufacturer claimed it would be "absolutely safe" to place it in the cellar. We, of course, wanted to comply with the insurance rules, although we thought it a useless expense, but are now very glad we did so. It is absolutely necessary to keep the place, where the generator is put, from freezing, so we constructed a sort of vault, nearly entirely under ground, and large enough to hold the generator and allow a person to get in for any purpose. The vault is of brick, and cemented like a cistern, and is covered with a double roof to make it frost-proof. When we need to refill the carbide chamber there is always plenty of daylight. The top is lifted off, otherwise it would not be safe to take a light of any kind, as enough gas might have escaped in some way to render the air in the vault highly explosive. From the generator a half-inch pipe is laid about a foot under ground, 50 feet to the building; then for 100 feet more along the ceilings to where the lights are wanted. The fixtures are constructed of ⅜ gas-pipe, with the usual brass fixtures.

We have finally adopted the Naphey jet, which consists of two jet-points bent toward each other so that the two streams of gas, about the size of a needle, meet midway and flatten out, making a flame about the size of a half-dollar. We are well pleased with the light, and can use from one to twenty jets, as the gas is generated automatically only as fast as used. The light is as clear as sunlight, and shows colors better than any other light. One must not look directly at the light very long, and then attempt to read or write, as the effect is about the same as looking at the sun.

As a great many are now talking of putting in this light, and as agents are going from place to place putting in "plants" of various kinds, many of them any thing but safe, we want to give all readers a word of caution. We think the arrangement as we have it is fully as safe as city gas, yet it is well to consider the nature of acetylene gas. That it is highly explosive can not be doubted, as a mixture of 15 per cent with common air renders it explosive, and for this reason it is well to be sure that pipe and fixtures are absolutely tight, and that all cocks are closed. We hear of some agents putting generators in cellars, and some manufacturers advise that course. Now, we consider that, according to our experience, absolutely dangerous. The nature of acetylene gas is such that it will find an exceedingly small hole, and we found our generator, as sent out, had several leaks, as also had some of our gas-fixtures. Then, too, we found that, when the gasometer was full, and generation of gas should stop, it would still generate to some extent, and bubble out from under the gasometer. It would not take long to release 15 per cent in a cellar; and then suppose one went in with a light to see how things were going, what would happen? Or suppose the building should get afire, or be struck by lightning, there would surely be a terrific explosion when fire reached the gas in the generator. We believe acetylene gas would create about as much havoc as so much gunpowder, and it is always safe to be on the sure side.

If you doubt that the gas is explosive, just take a match and let it burn a minute, and blow out the flame, and hold the coal spark in the gas turned on from a burner, and it will invariably take fire.

Notwithstanding all the above we are pleased with it, and, with all due safeguards, is no doubt the "coming light." We do not see how it could ever be a success, or even safe to burn in a lamp to be carried around, and it is well to go a little slow on this point.

You have no doubt read of several fatal explosions caused by acetylene gas; but all such, so far as we can learn, were caused by gross ignorance or criminal carelessness. Carbide is a good deal like quicklime, as it will slack if exposed to damp air, only that it generates an explosive gas. Now, if a quantity of the carbide is dumped in a closed room, or, worse still, a cellar, and allowed to partly slack, a serious explosion may result. In our opinion, carbide should always be kept air-tight, and it is usually shipped in such cans; and in such form is absolutely safe, as there is nothing to explode. If this article will prevent a single explosion, we shall be fully paid for writing it.

Milan, Ill., Feb. 7.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

ADVICE TO BEGINNERS.

Question.—I am about commencing in bee-keeping. I have subscribed for GLEANINGS, and see that you have a query department in said paper. Will you kindly give some advice to a beginner—about what he should pay out in the start, whether it is well to try to make the things he is to use, or buy them? any items looking toward success—what temperature the cellar should be kept where bees are being wintered therein? at what degree of heat it is safe to let bees fly where they are wintered on summer stand, and any other information which you may think of use to a beginner?

Answer.—In replying to this inquiry I will try to say a few words for beginners in bee-keeping, or those contemplating starting out in such business, and perhaps they may apply to some who have kept bees several years. I would not consider it good policy to pay out more than $40 to $50 in starting, including bees, hives, books, and all. If you do not buy more than from two to four colonies, and the latter should be the limit (in my opinion) for the one who has had no experience in the business, $50 will cover all necessary expenses. If you are a good workman, and have the necessary tools, I would advise making all the needed wares after you have started, except the sections which you are to use, for in this making you will not only be self-supporting, but this part of it will put into you an enthusiasm which will tend much toward success. It is doubtful whether any one, no matter how good a workman, can get out sections by hand that will in any way compare with those now on the market, at prices which would not even give a living to the one who tried to get them out by hand. Hence I would advise all, who do not have machinery suitable for the work, to buy their sections in the flat. When I first began bee-keeping I was charged $20 a thousand for sections in the flat; and as I thought that a high figure I purchased machinery and manufactured sections for sale. The price soon went down to $15, then to $10, then to $8, then to $6, at which time I said, "Others can have the trade; it will pay me better to work at something else." But as I had the machinery I continued to get out my own sections till the price fell to $3.50, when I concluded that I could not afford to run my own machinery, after paying the price for lumber which I had to, at retail, if I had any respect for the worth of my time and the use of the machinery. And now any one procuring 5000 sections can easily get the same at $3.00 per 1000, and, what is more, the sections which we used to pay $20 a thousand for would in no way compare with the $3 sections of to-day. In no other one thing has there been a greater improvement along the bee-keeping line than in sections since they first came into existence.

It is well to make sure you start with good hives; then do not get crazy over the "puffing" of wares by those having said wares for sale, and pay out your hard-earned dollars (earned in some other business), more than just to get a start. Make your bees and yourself self-sustaining; and after the first start do not pay out any thing more than what the *bees* bring you in, always remembering that, if you can not make four colonies pay, you can not make four hundred. If you should happen to make a failure of the business, you will have the consolation of knowing that you have lost but from $40 to $50, instead of $300 to $400, or perhaps as many thousand, as some have done.

There seems to be a proneness to go into the bee-business more recklessly than into almost any thing else. I suppose it is on account of the "bee fever" which seems to seize nearly all who become interested at all in the matter, and this recklessness is to be deplored wherever found. Be willing to start at the bottom of the "ladder," and work your way up, the same as you would do in any other business. Also remember that, if you would succeed, you must look after your bees. If any person expects to realize a large income from his bees, and never looks after their condition (simply hiving the swarms and putting on the sections), he will find himself greatly mistaken. No man would treat his horse or cow in that way; no, not even his pig. How many who read this know as much about the condition of their bees as they do about the condition of their horse, cow, or pig? Failing to thus know, you are not caring for them as well as you would for such stock, and therefore you can not expect any more profit from the bees than you could from a horse, cow, or pig, under like circumstances. You should see your bees often; and if they are in the cellar, keep the temperature of that cellar from 42 to 50°, if possible, and do not let the dead bees accumulate on the floor to get mashed, and mold there, thus making the air unfit for any animal life. If your bees are outdoors, and the mercury rises to 45 or 50° in the shade, with the sun shining brightly, and the atmosphere still, let them have a cleansing flight, no matter if the ground is covered with snow. Bees can get off the snow just as well as from bare ground, if the snow is not too light (that just fallen so it will let the bees sink into it), and the air and temperature as above. Do not let any colonies starve or suffer from lack of attention on your part; neither disturb them during winter unless you know that they demand your attention, for "over attention" during the winter may prove as bad or worse for the bees than a lack of the same. In fact, do things at the right time, and in a proper manner, leaving nothing undone that will contribute to your success. Bee-keeping pays only when our pets are properly cared for; and if any one can not spend the amount of time on them they require, he or she had better keep out of the business; for sooner or later they will turn from it in disgust, and lose all they put in it at the outset. But, making a success of bee-keeping, then you should be willing to impart to others a knowledge regarding the thing which contributed to your success, if you wish the greatest remuneration from your labor. It is said that Lord Charles Beresford received a most romantic reward for what he did some years before. One bitter night, when his ship was off the Falkland Islands, there was a cry of "man overboard!" The fallen one had disappeared beneath the floating ice. Lord Charles, though clad in heavy garments, instantly seized a coil of rope and plunged into the sea. Down, down he went till he almost feared that the other end of the rope had been insecurely fastened. But he soon seized his man; the rope tightened, and the ship's corporal helped them both out. Several years elapsed; and one night, when Lord Charles was speaking in a crowded auditorium, there was seen a commotion near the door. Cries of "put him out!" were heard; but Lord Charles invited the man to come up to the platform, and they would listen to what he had to say. In great excitement the man struggled forward. His great desire was to shake hands with his rescuer. He was the sailor who had been saved from the icy waters off the Falkland Islands. No other investment brings back such rich reward as some exertion or sacrifice which we may make for others. It is not the bee-keeper who is all the time looking out for "number one" who is the happiest or receives the greatest reward from his pursuit, but the one who gives the most of what he knows, to help sweeten the lives of others.

HEADS OF GRAIN FROM DIFFERENT FIELDS

INTERESTING OBSERVATIONS; HOW BEES SEE IN A DARK HIVE.

Without entering into a dissertation as to the nature of Rœntgen's discovery, or attempting to deal with the peculiarities of the ultra-violet end of the spectrum, it is plainly apparent that there are rays of light of which but little is known even in this age of discoveries. Thinking of this, and after close observation, it has occurred to my mind that, although human vision is apparently not endowed with such rays, some insects have the power of utilizing them to a great extent. For example, the question arises, How is it that bees pass out into bright sunshine from the absolute darkness of a hive's interior, and fly off without hesitating for a second, and evidently without any inconvenience from the sudden change? Should we attempt the same thing our vision would be perceptibly affected for some minutes. Again, what power of vision enables bees to work with such beautiful accuracy in complete and utter darkness? Or, to go still further, place a sheet of foundation in a strong colony, and, when the comb is drawn out, watch how the queen will deposit a small patch of eggs (somewhere near the center of the new comb) about as large as the palm of one's hand; then see how she will pass to the other side of the same comb, and, without hesitation, commence laying her eggs in the cells whose bases occupy the other side of the septum or midrib, so that the brood would lie back to back, as it were, for mutual warmth. What power enables the queen to do this? Can she see through the wall of wax against which the cells are built? The same may be said of worker bees and honey-storing. With equal regularity do bees fill the cells on both sides of a comb. How is it done? Do they utilize the X rays? I put these queries, in which there is a field of research for any one of a scientific turn, and I leave it for exploration during the dull season. Many other items in the economy of the hive clearly point to the peculiar and extraordinary range of vision possessed by bees, requiring study to throw light thereon.—*Henry W. Brice, in British Bee Journal for Dec. 30.*

[The foregoing is not fanciful, by any means. It is, indeed, wonderful how bees can go from absolute darkness to the strongest light. It is equally wonderful that the queen can lay her eggs opposite, as she does, in little patches. These phenomena can be accounted for only on the supposition that the bees have two kinds of sight—one like ours, and the other something after the order of a Rœntgen vision. Who is so wise as to tell us beyond a peradventure?—ED.]

THE MOSQUITO-HAWK AND THE HARM IT DOES TO BEES.

I never realized till this year how much harm the mosquito-hawks do to our bees. For two months last spring I killed every day from 10 to 440, depending on the weather for them to fly low or out of reach—an average of 100 a day. I am certain that I never killed a tenth of the hawks feeding all the time on the bees; and counting only ten bees to a hawk each day, when each one may kill 40 or more, you have a total of 10,000 bees gone every evening.

Francis, Fla. AUG. LEYVRAZ.

DOES SANDPAPER ON THE SECTION-CLEANING MACHINE FILL UP?

In regard to a machine for cleaning sections, you say, on page 100, you are afraid that the sandpaper will become filled with propolis, which it does. I made a machine *a la* Golden, which works well for five or six sections, when the *sandpaper* gets filled with propolis so badly that I have to renew it. The machine isn't much faster than scraping by hand, but does better work. R. B. LARKIN.

Pueblo, Ind.

[Your experience does not accord with mine, friend L. I have tried a good many more sections than the number you refer to, and, contrary to what I expected, there is almost no trace of propolis on the paper. Perhaps that which you use is too fine. It ought to be at least as coarse as 1½; possibly 2 would be better. But, understand I do not say that sandpaper will *not* fill up, but it has not been my experience thus far.—ED.]

BEGINNERS' QUESTION BOX BY E. R. ROOT

J. A. N., Pa.—Ducks and bees thrive nicely together, notwithstanding the ridiculous statements of some *quacks* to the contrary.

O. P. H., Tex.—Sections 4½x5⅜x1½ you would find a little too large for the thickness of the comb, I think. The 4x5x1⅜ seems to be as large as it is admissible. That holds an even pound. Your 4½x5⅜ would, I think, hold 1⅛ to 1¼ lbs., and it is not desirable to have a section over 1 lb., as customers have the impression that a box of honey should not cost over 15c; and if you were to charge as you would have to for 1¼ lbs. it might make a hard-selling section. If your section is made at all, it seems as if it ought to be a little more than 4½ wide. The regular super is 18¼ long, and ¼ inch play is a little too much. If it were made 4½ plump, say 4$\frac{17}{32}$, it would fill out the space better.

L. K., Ill.—You ask why the slats were spaced further apart in our regular fences than in our Ideal. One reason was because automatic machinery made the regular, and hand machines made the Ideal. The first named was spaced for $\frac{2}{12}$ inch, and the last named for ⅛ inch or less; but we have concluded to make the new stock of I fences with spaces $\frac{2}{12}$ inch. We do this because some of our customers like yourself have objected to this close spacing. There is danger, if the slats are spaced too far apart, that the honey will be slightly ridged. Two-twelfths is all right, and causes no ridging; but sometimes the machine would get them a little further apart, and we therefore determined to be on the safe side. But we have made a little change whereby all this will be fixed. The new I fence, or stock, that we are making, from now on will have the slats spaced a scant $\frac{2}{12}$—that is to say, as nearly as we can get it, $\frac{16}{100}$.

A. B., Texas.—Under some conditions the bees will build straight combs from only a starter 2 inches wide; but the beginner had better use full sheets, otherwise he may have a lot of drone comb on his hands. The condition under which bees will build all worker is just before the honey-flow. If a starter is given them during a time when honey is coming in they may (and quite likely will) build store cells—that is, drone comb.

I see no reason why you could not unite the bees in a box hive with those in your frame hive. Simply proceed by what is known as the Heddon short method of transferring, as given on page 32 of our catalog.

The honey that is taken from the solar wax-extractor is inferior, both in quality and color, to honey taken out by the ordinary honey or centrifugal extractor. It is not customary to throw chunk honey—that is, honey in the comb—into the solar wax-extractor unless it is so badly broken that it is desirable to secure the wax and the honey in separate lots. The better way to dispose of chunk honey is to put it up in pails or glass jars, and sell it in the local market. If sent to a commission house it will bring a low price, because the buyer—that is, the one who purchases of the commission house—is liable to think it is nothing but glucose and chunk honey.

J. H., N. Y.—The worst objection I see to the Manum hive is that it is rather large and expensive—a good hive, by the way, if one is willing to pay the extra difference in price; but I really can not see how it will produce more honey at less cost than our more cheaply constructed Dovetailed chaff. With regard to the chaff rattling down, or settling, so as to leave only air-space between the two walls, I will say this may happen if the hives are not tightly packed. It is our rule to pour in the packing-material, and ram it with a board, about as you would ram a wad in a gun. The packing-material is poured in and rammed; more is poured in, and then rammed again. We have packed hundreds of hives in that way, and the packing material never, to my knowledge, settled away from the top of the space between the two walls. Perhaps you wonder how I know. When we had foul brood a few years ago we had something like 60 or 75 two story hives infected that were packed in our usual way. In order to make a good job of disinfection the bottoms were removed, and the chaff pulled out and burned. We found that it was packed as solidly as the day it was put in, and nice clean, and dry.

With regard to your plain section, 7 to foot, 4¼ square, I can not for the life of me see why they should hold such scant weights. By looking at your separator I find some of the cleats are a scant $\frac{2}{12}$, and some only ⅛ inch thick. If they were of the latter thickness this would account for the shrinkage in weight, for in that case the separator would have ½ bee-space and the bees would take the other half out of the face of the honey; and as the combs would be a whole bee-space thinner, figuring ½ bee-space for both sides, this would, of course, make up for the light weight per pound. We have been careful to make the thickness of our cleats exactly $\frac{2}{12}$ in. As every thing about our fence is made by machinery, it is fair to assume that we get more uniform results than you secure from the double-cleated separators with cleats of varying thickness. Indeed, I know that some who have used plain sections 1½ inches wide and 4¼ square, with fence such as we use and recommend, have secured combs weighing on an average the same as combs in old-style sections with bee-ways 1⅞ wide.

But suppose, for instance, that our 1½ plain sections would run only about 12 or 13 ounces. I am not sure but it will be a blessing in disguise. The markets everywhere are clamoring for ten-cent comb honey; and the only way that is practicable to put honey on at that price is to have ¾-pound combs.

EDITORIAL
BY
E. R. ROOT

EIGHT extra pages again.

SO far bees have wintered most excellently, and reports generally throughout the country indicate the same thing. But, hold on! It is sometimes more difficult to spring than to winter bees. We shall see how it will be this spring.

WE are having a very warm, wet, muddy March. If this warm weather continues much longer I shall be fearful for results later. There never was a truer saying than that "when March comes in like a lamb it goes out like a lion;" and it is then that the bees catch it—especially the brood.

THAT BLIND EDITOR.

SOME chap in the *American Bee Journal*, referring to my early disapproval and subsequent approval of the plain section, accuses me of being *blind* when I *want* to be blind, and of being able to see when I want to *see*. I take it that this is a polite insinuation that, when it is to the interest of our supply trade to recognize the merits of a good thing, I am loud in my praise of the thing in question; and that, when it is not to the interest of our supply business, then I am very *mum*. Naughty York, not to put on his name and *address!* I wish I could just catch that fellow without a name. I would show him that even *he* looks through a glass darkly, for it is very evident he fails to see that I have not been as naughty as he thinks. However, I will forgive him, for, though not committing himself directly, he apparently thinks the plain section and fence a good thing.

BEE-VEILS FOR THE KLONDIKE.

WE have been selling hundreds of bee-veils, and especially the globe bee-veil, for use at the Klondike. When we heard they were selling like hot cakes, for a region that is supposed to be colder than most inhabited localities in the world, I wondered what they were for. Then I was told they were to keep off "skeeters," for they are actually thicker there than in Florida and other mosquito-infested countries. The worst part of it is, they are mammoth in size, and can take a horrible bite. If reports are correct, it is something of a problem to know what to do with dumb animals because of these same blood-suckers. The report does not say whether they are bad during that season of the year when the mercury is below zero; but a "tenderfoot" would suppose they are troublesome only at that season when the weather is warm, if there is such a thing as *warm* in the Klondike.

THE WOLF IN SHEEP'S CLOTHING.

MR. J. M. JENKINS, of Wetumpka, Ala., gives some good-natured kicks and growls at the *American Bee Journal*, and among other things he says:

> I also growl about the way in which you and GLEANINGS, and perhaps other bee-papers and correspondents, sometimes hint at or tell on dishonest commission men. If a commission man does a crooked piece of business, and it is published without his name, what good is done the unsophisticated country sucker who buys your paper, and also swallows the plausible buncombe and flattering testimonials of Wheadon, Horrie, *et al.*, except to make him suspicious of *all* commission men? What's the use of putting us on to 'em after the police have chased 'em out of town and closed up their business?

Editor York replies after this fashion:

> Experienced publishers, and honorable ones, too, have some respect for libel laws, as well as for other good laws. We *can* not publish all that we would, sometimes.

Mr. York has hit the nail on the head. Unfortunately, we as publishers can not even tell the truth in regard to what we are morally certain is truth, unless we can prove the truth by affidavits or other undeniable facts. For instance, I may know positively, in my own mind, that a saloon-keeper is selling liquor illegally; but to *prove* it would be another thing. I may be pretty well satisfied that a commission house is tricky and dishonest; but to come out broadly with the statement might render us liable for heavy damages in a libel suit, for the reason that we might not be able to produce the evidence necessary to satisfy the jury or the court before whom the case might be tried. So the next best thing we can do is to "hint at or tell on dishonest commission men" in a general way. And very often this is all that is necessary. For instance, a snide house may have a very plausible and apparently honest appearance; but a bee-journal can often uncover the swindling schemes they are about to launch forth, i. e., how the wolf has put on sheep's clothing. Whenever that honest (?) old ram comes around, bee-keepers will be able to recognize at once the "true inwardness" of the "baste," whether under the name of A, B, C & Co. or X, Y, Z & Co.

Sometimes we do get hold of enough proof that is strong enough to warrant us in giving names and particulars, but more often not. Most of the dishonest rascals are just "slick enough" to cover up their tracks far enough so that a publisher dare not reveal their swindling schemes in connection with their names.

By the way, I somehow have a sort of inward feeling of rejoicing to know that Bro. York comes in for his share of "kicks and growls." Misery loves company.

VENTILATING BOTTOM-BOARDS.

Two or three issues ago I asked for suggestions in regard to the construction of bottom-boards that give better ventilation than even our Danzenbaker board with deep entrance; for quite a number, among whom was Dr. Miller, seemed to think that an entrance the full width of the hive, and ⅞ deep, was not enough; that, even when the hive was raised up an inch on four blocks, giving an inch space on the two ends and two sides, this was none too much. In response to my request, various ideas were submitted. From among the lot I selected out a few of the best.

Fig. 1 shows one that makes use of the ordinary shallow entrance; but the side and end cleats are so constructed that ventilation may be secured all around the hive, simply by slipping out the cleats S, S, S, etc.

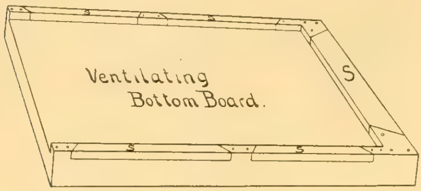
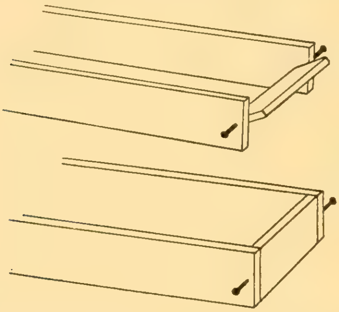
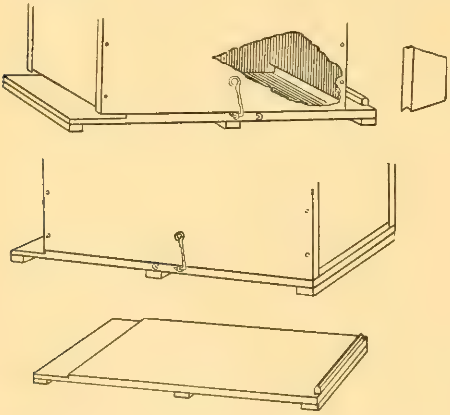


Fig. 2 shows a deep bottom-board having the rear end so it can be tilted out, something like a shutter. This is exactly the same idea that was advanced by father Langstroth in some of his hives away back in the early 60's.



Still another idea is represented in Fig. 3. Extra ventilation is secured by sliding the hive-body forward, much as we used to do the old Simplicity body; but in this case it leaves an opening at the rear as well as at the front.



It does not, however, provide ventilation at the sides. Of the three styles of bottom-boards above shown, the one given in Fig. 1, submitted to us by Stoughton Cooley, Maywood, Ills., is the best. Of it he writes:

> With the bottom-board so prepared I began the season with the front closed down to about three inches during the cold spring days. This was gradually widened as the weather warmed and the bees multiplied till the entrance-blocks were entirely removed. When still more ventilation was needed a section of the strip on each side of the front end of the hive was removed. This was easily done by inserting the end of a screwdriver at the front of the hive, and gently lifting till the weight was removed from that end of the bottom-board. The strips come out easily because the propolis at that time of year is soft. When still more ventilation was needed I removed the two pieces at the back part of the hive, and finally the one at the back end. By this time the hive-body was resting on six supports, which kept it in the position it was in when closed, with the frames the same distance from the bottom-board, giving the bees no excuse for building comb-ladders to climb up on, and at the same time there was free ventilation on all sides and ends.
>
> When the harvest was over the process was reversed. As the weather grew cooler the strips were replaced as nearly as I thought the bees wanted them replaced, until, when the cold weather came, they were all closed up as snug as you please.

Every one can test the value of extra ventilation during the height of the honey-flow by lifting his hives up on four blocks, providing he is progressive enough to have his hives on movable bottom-boards.

In several letters of late the suggestion has been made that we increase the bottom ventilation to a hive by lifting the cover enough to let the excess of hot air pass out of the top of the hive. Some have asserted that they are positive they secure more honey, and have less swarming, with hives so manipulated. But there is another class, however, who insist that the super must be hot and air-tight; the drafts of air must not be permitted in the supers while the bees are ripening and sealing honey; that neither process can go on satisfactorily under such conditions; that ventilation must be secured wholly from the bottom.

THE PURE-FOOD CONGRESS.

It will be remembered that Emerson T. Abbott, Eugene Secor, and Dr. Mason (who didn't go) were appointed delegates from the United States Bee-keepers' Union to attend the Pure-food Congress that met in Washington March 2d. We have just received the following from Mr. Abbott, which will explain itself:

> I returned from Washington on Sunday morning. Mr. Secor went with me. The Food Congress was a grand success, and the industries of the country were thoroughly represented. The bee-keepers received full recognition, and our delegates were placed on all the important committees. We got all that we asked for, and I do not think the industry was ever before so thoroughly identified with the other industries of the community. I do not think there is any doubt that we shall get a national pure-food law; and the bee-keepers will be able to take some credit to themselves for its success. I will write the matter up fully for the March issue of the *Busy Bee*, which will be out in a few days.
>
> EMERSON T. ABBOTT.

The U. S. B. K. U. has already done a good work in sending delegates to this important meeting, and I have no doubt the results will be sufficient to justify the expectations of the members and friends of the Union. Let the membership continue to "roll up, tumble up, any way to get up." We wish the outside world to know that we are somebody, and that, when we ask for something in the way of protection against the evils of adulteration, we are strong enough to back up our demands.

WISCONSIN FOUL-BROOD LAW.

A copy of the foul-brood law of Wisconsin, drawn up by its inspector, N. E. France, of Platteville, Wis., is given in the March *Review*. Of this law, Mr. Wm. McEvoy, State Inspector for Ontario, and the one who has done such splendid work in ridding the province of a disease that would have wiped bee-keeping almost entirely out of its confines, says: "It is by far the best in the world; and every State and Province should have a foul-brood law exactly like it." I do not know exactly *why* Mr. McEvoy considered this better than any other law unless it is because it contained this very important section:

> Section 1. Upon the recommendation of a majority vote of the members of the bee-keepers' societies of Wisconsin, the governor shall appoint for a term of two years a State inspector of apiaries, who shall, if required, produce a certificate from the governor that he has been so appointed.

The other features of the law are similar to the laws in force in other States, with the exception that a sum is appropriated out of the moneys in the State treasury, in an amount not exceeding $500; and the inspector, out of this, is to receive $4.00 a day and traveling expenses for actual time served.

At the time of my visit through Wisconsin in 1895 I heard that foul brood was making rapid advance through the State—so much so that bee-keepers were becoming considerably alarmed; and the worst part of it was, that a certain bee-keeper whom I had the fortune (or misfortune) to meet, and who had a grievance against another bee-keeper, not only let the disease run riot in his own apiary, but threatened to scatter the seeds in other apiaries providing the other parties would not do so and so. The result was, a concerted action was taken on the part of the different conventions, and a law was formulated, and N. E. France was appointed inspector.

Now with regard to this law again. Many of the foul-brood laws are good so far as they go; but they lack the one thing needed to make them operative; namely, a section (or similar section) like the one given above.

DETACHABLE BEE-WAYS IN SECTIONS.

Mr. Doolittle writes an article in the *Review*, protesting against the plain section. The principal ground of the objection seems to be that the edges of the combs are not rounded off so as to leave a sort of wedge-shaped attachment to the section itself. If this objection is a valid one, the fence may be easily constructed so as to secure the same sort of attachment of comb to wood that we find in the old-style section with bee-ways. For instance, if the slats were put close together so the bees could *not* pass or see through them, and the cleats were made to extend clear up the whole length of the section, and ¾ inch wide, I would bet my old hat against Doolittle's that we could have the same kind of fastenings of comb which he thinks is essential. The shape of the comb is dependent, not upon the fact whether the sections have bee-ways or no bee-ways, but upon the *construction of the separator or fence*. Now, then, if, next year, plain sections can be bought for 25 cts. less per 1000, and if the combs of these plain sections can be made to have *either* form of attachment to the wood, the objection disappears Why, it makes no difference whether the bee-way in the sections is detachable or not, so long as it is of the same sort and kind. The plain section has *detachable bee-ways*, and the old-style section, *permanent bee-ways*. The only difference is, the former will be cheaper. I am sorry that we have "an ax to grind" in the matter; but even if we do I can not refrain from correcting what I honestly think is a misapprehension. Mr. Hutchinson, who certainly has no interest in that "old ax," seems to think a good deal as I do, and that is why I make bold to place emphasis on this point.

STORING HONEY IN CISTERNS.

R. Wilkin, of California, reports that he has 14 tons of extracted honey stored in his concrete fire-proof storehouse, which he is holding at 5 cents. As there is not likely to be any California honey this season, the last year's crop will probably be snapped up.

But my purpose is not to give friend Wilkin a free advertisement so much as it is to refer to the fact that he stores honey in a *fire-proof concrete* reservoir. I hope he will send us a photo and description of the storehouse. I am just Yankee enough to want to know whether he has found it practicable to store honey in a reservoir of brick or stone lined on the inside with water-lime or Portland cement. If he has, then when we are short of storage-tanks or barrels, *perhaps* we could store the honey in empty cisterns, then draw or pump it out as might be required. Who is there among our readers who has ever stored honey in a cistern? If there is such a one, let him hold up his hand.

THE HICKS WEATHER ALMANAC.

The almanac for 1898 is at hand, and I have given it a pretty thorough study. One of the most preposterous things about it is undertaking to tell what the weather will be all over the United States for one month, on just two pages. As nearly as I can make out, it is done by the *moon*; suppose, however, we say nothing about frost, high winds, etc., and confine ourselves to the prediction of rain. Well, now, when we consider that sometimes it rains like suds in one locality, and does not rain a bit, say only ten miles away, how is Hicks going to help us with his almanac? Our friend below tells us what success he had in trying to make it do so.—A. I. R.

> On page 152 you show up the "Rev." Hicks, as he ought to be. A few years ago I bought a copy of his almanac, price 25 cts.: hung it, with a lead-pencil, on a hook in the dining-room. On every day which was rainy, I made a cross on the figure indicating day of month; at end of season there were as many crosses on the light figures as on the heavy ones. There is a fortune in almanacs at 25 cts. each.
>
> Lincoln, Ill., Feb. 24. A. B. Nichols.

CORRECTION.

After the other side of this sheet had been printed I noticed I made a bad mistake in figures. The figures on page 214 should read $125,000 instead of $1,250,000.

HEALTH NOTES

BY A. I. ROOT

Perhaps the friends who are perfectly well, especially those who never have any trouble with their digestive apparatus, had better skip this. In fact, you are each and all of you at perfect liberty to stop whenever you feel so inclined. This talk is mainly for those who are among the sick and the suffering — those who have dosed themselves with pills and other drugs in the vain hope of getting relief from their aches and bad feelings. With this preamble I am ready to tell you my story.

I told you something about my seasickness, in our last issue. Well, I was just as sick, or a little more so, coming home; and while I suffered more or less almost every hour during that trip of 48 hours, I also learned some very valuable lessons, and made some (at least to me) important discoveries. By the way, did it ever occur to you that God teaches us some of our most precious and wholesome lessons through affliction, pain, and suffering? For the first two hours, while the boat was winding among the coral reefs, I enjoyed it very much. Finally, as we approached the great open sea, I asked a passenger what it meant to see so many white sails away off in the horizon, that appeared for an instant and then disappeared.

"White sails? Why, those are not sails; they are the white *breakers*, fully ten miles away, glistening in the afternoon sun."

"Why, do you mean to say that it is going to be rough like that when we get away off out of sight of land when it is so still and quiet here?"

I soon found out he was right. By the time we had covered the ten miles I began to be sick. I braved it for a while, but was finally obliged to remember my little text, "Be still, and know that I am God." In anticipation of similar troubles I had secured an upper berth on deck. I lay down as before, with my head no higher than the rest of my body, opened the port-hole so as to get the breeze, and stayed right there for almost 48 hours. For quite a long period I could not bear even the mention of food. The stewards on the boat were very kind, and came around at each mealtime, even when I did not ring for them, and asked if there was any thing they could bring me, answered my questions pleasantly, advised and suggested in regard to the matter of seasickness. In the hotels, you know, they usually require extra pay where refreshments are sent up to one's room; but on the Trinidad I was told they never think of extra pay, and it is not customary to fee the waiters. When I asked my own particular steward in regard to the matter he said:

"This is our business. We are paid to wait on you, and to make you just as comfortable as we possibly can. This is what we are for."

On one occasion I called for some beef-tea between three and four o'clock in the morning, and it came promptly, nice and hot, and it "hit the spot" too I tell you. Now, then, in regard to my discoveries.

I very soon decided this would afford me an opportunity to compare the lean meat as a diet with one of vegetable and starchy foods. In fact, I heard the passengers discuss the matter, in a group. One man recommended orange juice when one can not take any other nourishment. Some said this, that, and the other. Just one person ventured to recommend a nice beefsteak, without fat or butter; and as soon as I was able to swallow any thing at all, I took the beefsteak and got along very well. Only once did the steak "come up." But I ate it this time, when nature revolted against food of any sort. I forced down the steak to see what effect it would have, and managed to keep it down two or three hours; but when it finally did come up it was just as sweet, fresh, and good, as when I swallowed it. Please remember it had been exposed to the feverish heat of the stomach all this period of time, and not changed in the least. Only one other article of food, and that was not food either, stood the same test. I drank a cup of tea, took it hot, thinking that, perhaps, like hot water, it would do me good. I kept it down about an hour, but it came up just as I drank it. The digestive apparatus had not taken from nor added to it a particle.

Now, it is not very pleasant to tell how other things worked; but I want to do it nevertheless, to demonstrate a valuable scientific fact. When I first got on the steamer at New York it so happened I was unable to get a meal of beefsteak. In fact, I had only time enough to get my last meal, before going aboard, at a lunch-counter. I got a nice piece of chicken and a cream puff. When I became seasick, old father Neptune just had fun with that cream puff. When it came up it was the most bitter, acrid, nauseating concoction that the very spirit of evil could conjure up, as it seemed to me. Orange juice came up converted into a horrible stuff almost as bad; and so with every thing in the line of starch, sugar, or fruits. Plain toast came nearer to the beefsteak than almost any thing else. Tea and coffee were all right providing I refrained from adding the least particle of milk or sugar; and I could hardly make the stewards understand that I wanted my weak tea with *nothing* in it. They would either put in a lump of sugar, or bring three or four lumps, which I always requested them to take right back. If you can get some good soft water, and drink it hot, it is about the best remedy I know of. Of course, it will come up, but let it come. Several rinsings of that sort are a most excellent thing for one with weak digestion.

While at Bermuda, in conversation with Gen. Hastings (whom many of you may remember as a prominent figure in war times), he told me he was almost invariably seasick going to or from New York, and that he always took advantage of it to get his digestive apparatus thoroughly cleansed by drinking water and letting it come up. He said it does not distress one very much after he has "got used to it;" and I was agreeably surprised to find that I could manage in the same way with weak tea, and not mind it very much.

Now, then, friends, before taking a sea-voyage take at least three or four meals of lean meat, especially avoiding starch, sugar, and fruits of every description. When you begin to get sick, if you can not get rid of it by keeping out in the open air, facing the wind, lie down as I have described, in a clean pure-air berth; and when you can take any thing, take just lean meat, and you will not be nauseated and distressed any thing like as much as if you had been on a fermentable diet. The lean meat absolutely *can not* ferment, like articles of food containing sugar, starch, or even milk.

Now, there is one thing more that I must mention, even at the risk of offending some good friends who may think it hardly fit for public print. Your lean-meat diet will tend to constipation if you are not accustomed to it, and the special thing to avoid is having your bowels overloaded, or loaded at all with the accumulations of several days past. Seasickness will work a remedy, it is true, but it is a very severe remedy, and your suffering may be "long drawn out" before relief comes.

Just before starting for home I had, as I supposed, gotten myself in pretty good condition by the use of hot-water injections (the rubber bags now in common use are very convenient for this purpose when traveling); but I afterward found out that, although hot water had taken away something every morning, there had not been a free and complete evacuation. After 24 hours of acute suffering, in connection with seasickness, another trial of the hot-water injection succeeded to my complete satisfaction. I had abundant evidence of complete deliverance from enough "unpleasantness" to make the healthiest man in the world at least *reasonably* sick; and from that time on, by confining my diet to pure lean beef, and keeping still, I could sing Beulah Land, and thank God for life and existence.

Permit me to say here that, when the boat went over the waves, up and down lengthwise, I did not mind it very much; but a large boat like the Trinidad is liable to get to rocking from side to side. The motion is so slow that, unless you get properly braced, you will be apt to roll from one side of your berth to the other. I doubled myself up so as to get my knees against one side, and my back against the other, and in that way I could sleep, and, in fact, I did sleep a great part of my time. A good friend suggests that a hammock, under such circumstances, would give relief, but I did not have an opportunity of trying one. Just before going ashore at New York I ate a beefsteak, and an egg on toast, and soon felt pretty well. Permit me to say that the beefsteaf furnished by the boat is of excellent quality—as good as you can get in any of our large cities; and when you are sick it will be brought to your berth at any hour of the day you call for it. If you can not get meat, fresh eggs answer better than most vegetables. Well, I ate my steak about ten o'clock in the morning, before going ashore. My train did not leave New York till five. Before taking the train I went to a restaurant and asked for a beefsteak. They did not serve any for less than 50 cts., and so I told them to bring along a fifty-cent tenderloin steak, thinking I could eat what I wanted of it. The waiter brought a great platter containing enough for a good-sized family. But I was just getting an appetite after my voyage, and I ate it all without much trouble. In fact, I do not know that I *ever* had trouble by overeating good lean beef where nothing else was taken with it. I went on board the train, slept tiptop, and reached Cleveland in time for early breakfast Sunday morning. (Of course, I do not approve of Sunday travel; but where you are on a train with a through ticket, it is not an easy matter to have things just as you would like them.) I stopped at a good hotel, and, feeling unusually well and hungry, I ate a pretty fair *regular* meal. Then I looked up the churches, and by accident fell in with my dear friend and old pastor, W. S. Ament, a missionary from China, who was on his way to preach in a Cleveland church. Of course, I went with him. When his most excellent sermon was about half through, I began to be seasick. You may inquire how I could be seasick while sitting in church. But I tell you I *was* seasick. The church seemed rocking, exactly as if it were on the waves. It would go away up on one side until I almost wondered why the audience did not lean over in their seats, and then go back and roll slowly up the other side. As the church was crowded, and I was near the pulpit, there was no possible way of getting out, so I sat and suffered, and prayed for deliverance. It did not come, however, until I got to my hotel, and got my head down just as I did on the berth in the boat. What did it? I soon found out, without any mistake. While at breakfast I sucked the juice of an orange, and ate a dish of oatmeal and cream, while the waiter was bringing my beefsteak. I was not sufficiently recovered from the effects of the sea-voyage to manage fruit, milk, etc. For supper, you may be sure, I had clear beefsteak once more. By the time I reached home I was able to eat buckwheat cakes and molasses, and things that other people do—that is, provided I took them in moderation. Now, I am well aware that a great part of this is, in substance, a story I have told before Perhaps I should not have made this repetition were it not that new readers are continually asking me questions about the lean-meat method of treating disease. A good many want to know whether I still continue dieting; what I think of lean meat by this time, etc. I have answered you pretty faithfully. Let me give you a little summary (as the experiment stations do) at the close of my story.

If you are able to eat and digest such food as people do generally, all right. You may thank God that you are not obliged to take up the lean-meat diet. If, however, you have trouble with fermentation, sick-headache, etc., such as I have described, then go to work and carefully test the matter, and see if it would not be better for you to pay your money out at the meat-shop rather than to give it to the druggists or doctors.

It is refreshing to find out, since writing the above, that on two points at least I am backed up by so good an authority as Johnson's Universal Cyclopedia: "With many persons, a mild dose of calomel just before the voyage will prevent a case of seasickness." Again: "Persons who are specially liable may escape by maintaining a horizontal position during the voyage."

OUR HOMES, BY A. I. ROOT.

> The kingdom of heaven is like unto a merchantman seeking goodly pearls, who, when he had found one pearl of great price, went and sold all that he had, and bought it.—MATT. 13:45, 46.

During the past winter quite a number of young people have united with the various churches here in Medina. There has been quite a revival at that new Methodist church I have told you about. Those who subscribed to help pay for the beautiful new building, as a matter of course attended the services. They had some money invested there, and they would naturally wish to attend; and I verily believe some of these have been induced to enlist for life under the banner of Christ Jesus just because they first invested some money in the church *building*. Well, there has also been a revival among the Baptists and Disciples, and, as a natural consequence, a good many of our boys and girls (I call them my own boys and girls, for they have been a long while in my employ) have come out during the past winter for the first time as young Christians. When I asked one of my young friends if he had really enlisted for life, he replied:

"Yes, Mr. Root, I have enlisted for life; and the only thing I feel sorry about is that I did not enlist a long while ago."

Now, then, the point I want to talk about to-day is just this thing of enlisting for *life*. When you hire out to a man you may hire out for a month, for the summer, or perhaps for a whole year; but it is not often that one hires out for *life*. Yes, in one way they do enlist for life, and quite a few of these boys and girls have been enlisting this way. They have some of them got married during the past winter; and if this does not mean enlisting for life, it *ought* to mean so. God forbid that any man or woman, young or old, should think of entering upon the marriage relation without solemnly declaring that it shall be "till death doth us part."

Let us now consider the young Christian again. Some young people do not think it a very sacred and solemn thing to choose Christ Jesus first, last, and always for their helper, their confidant, their nearest and dearest friend. In thinking of those who have united with the church, I felt as though there were some things I should like to say to each and all of them. My dear young friend, let it be really and *truly* enlistment for *life;* and do not let any thing else in this whole wide world crowd it out and get into the background. You can not tell—no one can tell—what a difference it may make in your life whether you hold fast to the strong arm of Him whom even the winds and the waves obeyed, or whether you gradually forget about it, stay away from church, neglect your Bible, so that people may say, "Why, such a one was *once* a church-member." Don't let any thing hinder you from attending the regular Sunday preaching. Then stay to Sunday-school, dinner or no dinner. Why, bless your heart, going without your dinner for an hour is the merest trifle in the world compared with the spiritual bread you will be sure to get in Sunday-school or in the Bible-class. Then do not neglect the weekly prayer-meeting; and, above all, read your Bible every day, no matter what happens. If you attend Sunday-school you will find the Sunday-school quarterlies and periodicals contain Bible-readings for every day in the week as sidelights to the lesson. I have greatly enjoyed reading these sidelights in the morning, after breakfast, and that is where I found that beautiful text at the head of this talk, about the "pearl of great price." This merchantman was looking out for good investments; and when he found that one pearl he lost sight of every thing else. In fact, he sold all his goods—all he had in the world—just that he might have sufficient to buy this one pearl; and after he had secured it he never repented of his bargain. In the parable just before our text, we are told a man had a treasure hid in a field. He, too, sold every thing he had to buy that field; and he sold every thing he had joyfully, gladly; yes, *gleefully* he parted with every thing else he had in the whole wide world in order to buy the field that contained that precious treasure. Now you, my friend, have caught a *glimpse* of that treasure—that pearl of great price. Worldly people will hold up other things to you. They will say, "Oh! I would not be everlastingly talking about that one thing. Never mind your prayer-meeting; come along with us, and have some fun. Be like other folks."

At first these invitations will look very reasonable; and, coming from people who seem very nice, and possibly from those who move in what the world would call the "higher circles," we can excuse you, even if you should be at times a little shaken in your faith; but, my dear young friend, do not give way. No matter what church you may have united with, your pastor and your Bible will tell you plainly that you can not be a Christian and go to dances, card parties, indulge in wine banquets, big suppers, and all that sort of thing. May God be praised that our lamented Frances Willard was able, through his grace, to inaugurate the custom of turning the wine-glass upside down when the starched colored waiter came with his bottle of champagne. Oh, yes! I have seen them do it; but, thank God, I was not *one* of them. Before Frances Willard set the example, the one who refused wine—that is, in certain circles—was laughed and sneered at. Miss Willard, as I have said, through the grace of God succeeded in making it *fashionable* to turn the glass over, and to give not only the waiter but every one present to understand that she was not afraid to have it known that she belonged to a *total-abstinence* organization. And now the example that she has started is getting clear into the White House, and into the great banquets given among senators and high officers of state. Do not lose sight of that pearl for which you once gave up all. That beautiful old hymn expresses it grandly:

Jesus, I my cross have taken,
All to leave, and follow thee.

I am not yet quite sixty years old, yet I have seen young people start—yes, some of them who had got to be pretty wild and wayward—at a revival meeting; I have seen them turn their backs resolutely against the world of follies that before had been their everyday pleasure, and I have seen them commence to climb from earth to heaven. Christian people always take pleasure in lending a helping hand; and by and by, before they know it, somebody says, "Well, now, that young fellow has really started out to make something of himself," and, acting on the thought, he makes him an offer. Other avenues open. For a time the young convert drops out of sight. He is off at some college. Then people are surprised to learn that he has been offered some high position of trust. The neighbors say, "Why, can it be possible?" Up and up he goes. In serving his Master he has forgotten that he begins to be valuable to the world. He is actually surprised when a call comes that sounds something like that beautiful verse in the 25th chapter of Matthew—"Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world." Such young men do not often get to be *millionaires*, and may God be praised that they do not; but they do a work that a millionaire *never* did. It is not alone the boys who are taking such tremendous strides, for there are more "Frances Willards" than one in the world just now, but she is not always known by just that name; and this reminds me of a touching little incident I heard repeated yesterday. I think some temperance ladies came over from England. They were addressing some meetings of the W. C. T. U. One of them said in substance, "We love and reverence Queen Victoria, the ruler of England; but we also love and reverence America's *uncrowned* queen, Miss Frances Willard."

Sometimes there is a little discussion as to whether the world is improving in morals, or whether it is going back. If we mix in with one class of people, and hear them talk; if we read one class of newspapers, we might say reasonably that every thing, without question, is going to the dogs. But if we make it a point to visit the schools and the church, hear the reports from mission workers who are now compassing the whole world; if we read the periodicals devoted to demonstrating the Christian religion, we can say that the Bible promises are really being verified; that temperance and purity are going to triumph ultimately. Some people complain, however, that the progress is terribly slow. True, it is slow; but it is because you and I are half-hearted and dilatory; it is because *we* do not help. No one can tell how much influence a single person may have in the matter, and that person may be just yourself. You are to decide. When a young man or young woman breaks away from card parties and these other things, and comes out for Christ, and *holds on*, that person is doing more than human tongue can tell to further God's kingdom and his righteousness. Or, as James says, "He that converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins."

While these thoughts were in mind, a little bundle of tracts came floating through the mail. I wonder if I hadn't better confess that, when I saw it was just some printed matter, and no money in it (may God forgive me for that last thought), I mean no *business* at all, when the seed business and every thing else are so rushing, I was almost tempted to put it into the waste-basket, without examination; but something said, "No, no! not a thing that is addressed to you or even to The A. I. Root Co., shall be passed by until it is at least reasonably well examined. Even if it is all printed, it may be one of God's messengers, and you may be entertaining an "angel" or casting him aside "unawares." Well, here is what I read on that tract; and wasn't I glad that I didn't throw it away without examination! Here it is:

"UNTO HIM WHO LOVED ME AND GAVE HIMSELF FOR ME."

(May this be *my* aim in all I say and do!)

When you think, when you speak, when you read, when you write,
When you sing, when you walk, when you seek for delight—
To be kept from all evil at home and abroad,
Live always as under the "eye of the Lord."
Whatever you think, both in joy and in woe,
Think nothing you would not like Jesus to know.
Whatever you say, in a whisper or clear,
Say nothing you would not like Jesus to hear.
Whatever you read, though the page may allure,
Read nothing of which you are perfectly sure
Consternation at once would be seen in your look
If God should say solemnly, "Show me that book!"
Whatever you write, in haste or with heed,
Write nothing you would not like Jesus to read.
Whatever you sing, in the midst of your glees,
Sing nothing that God's listening ear could displease.
Wherever you go, never go where you fear
God's question being asked you, "What doest thou here?"
Whatever the pastime in which you engage,
For the cheering of youth, or the solace of age,
Turn away from each pleasure you'd shrink from pursuing,
Were God to look down and say—
"What are you doing?"

Could any thing have been devised to so neatly supplement the words I wanted to say to the new converts throughout our lands? Why, it seems to cover the whole ground so completely, including every thing I would ask a new convert to do, that I could not but thank God again and again for sending it my way. Well, the best part of it is, on just one of the little leaflets I read the following: "To be had free of A. F. Cowles, Toccoa, Ga." You see the dear brother (or sister, I do not know which it is, and it does not matter) is sending these out *postage paid*, without any hope of benefit in any way except to spread the news of God's kingdom. Well, now, you can do as you choose; but *I* am going to have a hand in helping to furnish postage-stamps for Brother Cowles. Dear reader, if you like the little tract; if it commends itself to you as it has to me, send for some of them, and send along at least a little to help pay postage, and then distribute them among your friends. Oh what beautiful Christian men and women we should have if we all followed that rule! For some time back—yes, for many years—when I get hold of a book or paper, as soon as it becomes evident that it is not for godliness and Christ Jesus, I begin to ask myself the question, "Will the dear Savior be pleased to see me reading such a book?" May God bless the words of this little tract, and may he bless the little message from your old friend to the younger ones who have commenced marching under the banner of righteousness, and who have *indeed* enlisted for life. God help you, dear children, to be *not* weary in well doing. Oh! you do not know—you will never know till the time comes—what it is you are *going* to reap if you are only faithful, and hold fast to the start you have made, perhaps in weakness and many trials.

HIGH-PRESSURE GARDENING

BY A. I. ROOT.

GROWING POTATOES AND ONIONS ON THE ISLAND OF BERMUDA.

While it is no doubt self-evident that we can not adopt the Bermuda plans, at least to any extent, in growing potatoes by the acre or by the hundred acres, I am sure that, where land is quite expensive, say in our little towns, or in the suburbs of our great cities, we can adopt with profit some of their methods. The gardens of Bermuda are little patches, from a few rods square up to an acre, and some of the largest gardens comprise perhaps two or three acres. The largest part of them are from one-fourth to one acre in size. Wherever there is a place between the coral rocks, and enough soil to make a garden, there a garden is located. While the island is pretty well covered with cedar-trees, these and various tropical bushes make excellent windbreaks for the little garden-patches. Besides the protection from the trees and shrubbery, most of the patches are inclosed with stone walls, varying from three to four feet in height to eight or ten feet, or even more. Many of the walls seem to have been built years ago in order to get rid of the stones. Where a piece of ground has only an occasional rock sticking up, these rocks are broken off or sawn off. A horse and plow is seldom or never used on many of the garden-patches; so if they get the rocks away so as not to come above ground, the ground can be worked very well with a fork where one is used to it. The gardens in Bermuda are so similar in many respects to those described by friend Merrill in our little book on growing potatoes in the island of Jersey, that those who have read this book will catch on readily to the situation. Where the piece of ground is large enough, and the rocks do not come near the surface, a horse and plow is often used. The plow is a sort of swivel plow. The horse goes back and forth on one side of the piece of ground, walking in the furrow every time. While this plowing is going on, boys with common garden-rakes put all the trash, weeds, coarse manure, etc., into the furrow. As fast as the furrow is turned, this trash is raked from both sides into the furrow, to be covered up next trip. The consequence is, when they are done plowing the piece is level, soft, and smooth, and ready to plant.

Over half of the population are colored. Slaves were once kept on the island; but England decided it was not quite the thing for a Christian nation, long before we did. I am told these slaves were set free in 1834. They are very industrious, well educated, intelligent-looking, and well dressed; and some of these colored men might well be called "lightning operators" in handling the fork, planting onions — in fact, almost every thing pertaining to their gardening operations.

Before undertaking to plant any crop, the ground is made fine, soft, and light, either with the fork or plow, as I have described. The best test I know of as to whether the ground is in the order it should be, is that you push your arm, without any effort, down nearly to the elbow, or down to the rock if the soil is not deep enough.

When I suggested I could take their horse and swivel plow and plant the potatoes faster, one of the workmen stared at me as if he thought I must be a stranger, and then said:

"I know we can plant ever so much faster by hand. We have tried it again and again."

He was just fixing his strings, so I thought I would wait and see how he worked. When the ground is nice, smooth, and soft, two strings are stretched on one side of the patch. These strings are really good-sized fishlines. They are stiff and hard, so they will not kink readily, and strong enough so they will not break. The potatoes are planted in rows from 20 to 22 inches apart, and from 6 to 9 inches apart in the row. The planter deposits his potatoes in piles, or in pails if he has pails enough, on each side of his piece of ground; then he stretches his two pieces of string, say 20 inches apart. A 20 inch stick lies at each end, to measure by. Then he takes a pail of potatoes, and goes along very much as we do when we are dropping by hand. Instead of dropping them in the furrow, however, as we do, he just plants them by pushing the potato down about four inches. With a flirt of his hand he fills the hole where his hand went down; and this flirt, applied each time, makes a shallow furrow or mark right over the row of potatoes. This serves to tell where they should come up during the first cultivating. After the ground is once made ready for planting, nobody is allowed to step on it. Even the dogs are taught to run around the garden-patches instead of tramping over things.

The planter sets two stakes when he starts out, the right distance apart, with his marking-stick. Then he goes to the further end and sets two more, drawing the two lines up tight. After he has planted through on the one line, he moves one stake. This throws it across the line, X fashion. When he gets planted through on the second line he moves the first stake over, making the X in two parallel lines just as when he started. If his garden-patch is irregular in boundary, as it usually is, he rolls up his lines, or unrolls, as the case may be, to make the length of the line to suit the width of the patch.

This is very close planting, as you will notice; and the Triumph potato, which is almost the only one used on the island at the present time, is very often planted in rows 20 inches apart, and 6 inches apart in the row. In order to get a crop, crowded like this, the ground must be made exceedingly rich, either with stable manure or with chemical fertilizers. One of the finest gardens I saw on the island was where they used Bowker's "complete manure" (costing about $40.00 per ton, I think) at the rate of one ton per acre; and this heavy manuring is put on as often as once a year, if not oftener. A good deal of the fertilizer is sprinkled over the ground at the time of cultivating. The cultivating is done as soon as the potatoes begin to show themselves above the ground. It is done with a potato-fork. The operator goes down almost if not quite as deep as the potatoes are planted. He walks backward, so that the ground is once more lightened and fined up. With a flirt of his fork he stirs every particle of dirt clear around the young plant.

The first crop grown in the winter time, of Triumphs, never blossoms. The potatoes are cut to one eye, on Terry's plan; and they like to have the potatoes sprouted enough so there will be no mistake about having a plant wherever a piece is put in. In Bermuda the rainfall averages 60 inches in a year; and 40 of the 60 inches comes in the night. Their soil is so porous, being composed mostly of pulverized coral rock, that the water goes right down through. Even where a garden is right down in a hollow between the hills, with no outlet, there is never any injury from standing water; and yet there is no underdraining nor ditching ever done in the Bermuda gardens. The consequence is, the soil is always soft. It never becomes soggy, and never bakes, as most of our soils do. On account of this

A BERMUDA POTATO-FIELD.

Please notice how completely the potato-tops cover the ground, coming up knee-high, or possibly more, to the man standing in the field. In the background you will catch glimpses of the native cedar-trees; and you can see how they have pushed their garden clear up among the rocks and bushes.

abundance of moisture there is no objection to sharp hilling up. When I talked level culture, they said the plants must be hilled up or else the winds would twist them off. They are hilled clear up to the leaves. Hilling up is done with a hoe. They usually hill up one side, and wait a few days and then do the other.

About two weeks before digging-time, more potatoes are planted in the bottom of the furrow, right between the rows. These are just coming through the ground when it is time to dig. The boy who digs the potatoes throws them out with a pronged potato-hoe, and in doing so throws the nice soft mulch among the younger plants just coming up. In this way you see this expensive, highly fertilized soil always contains a growing crop; and this is kept going on right along until three and sometimes four crops of potatoes have been grown continuously right on the same ground.

The potato-bug has never yet crossed over to Bermuda. They do have the blight, however, greatly to their sorrow. I told them they ought to be quite happy so long as they had no bugs and blight both, as we have. There is a difference of opinion in regard to the value of spraying with the Bordeaux mixture to prevent blight. Some declare it is a perfect remedy, if put on in time. Others say it sometimes *seems* to keep off the blight, and then again it doesn't. Many patches that have been sprayed quite thoroughly were badly injured by the blight. Others feel sure the spraying had kept the blight away; but as there were, occasionally, patches that did not have blight at all, even when no spraying was done, you see the matter is considerably in the dark.

The Bermuda potatoes are celebrated almost the world over for their excellent quality. The soil is so light that the tubers are never squeezed out of shape. When first thrown out of the ground they are as handsome, clean, and smooth, as a lot of fruit. No wonder, for they have room to grow and expand in every direction without any thing to mar or squeeze them. When I remarked that we did not consider the Triumph a first-class potato in the States, my companion, Mr. Morrison, said we would have some for dinner. They were boiled with the skins on. They not only burst the skins open, and showed their rich contents almost as white as snow, but were so dry and mealy that I was prepared to acknowledge they were the finest potatoes I ever ate anywhere. But we had been having a pretty good wheelride that morning, and Mrs. Root declares I call every thing the "best in the world" after a wheelride.

The Bermuda gardeners said if I would give them a potato that would not blight it would do them more good than any thing else in the world. It must be a red potato, for some way or other the red color has become a trade-mark of the Bermuda potato. The Garnet Chile is grown a little later in the season, but not as many of them as of the Triumph. Minnesota Red and Early Rose used to be standards, but they got so they did not yield very well.

One large source of manure for their gardens is seaweed. This is also mentioned in our book about growing potatoes on the island of Jersey. I presume it is the same thing that the sea washes up on shore all around the island. I think it is supposed to float on the sea from the Canary Islands, and I think some of the salts of iodine are found in the ash. A load of this seaweed, just as it is gathered where it is washed up, is thought to be worth as much as a load of stable manure.

With this close planting, very likely our Bermuda friends do not get the great yields we sometimes get here in the States, per acre—that is, for one crop; but when they get three crops, one right after the other, and get from six to eight dollars a barrel, you see it counts up. Their potatoes are marketed in New York at a season of the year when new potatoes are a rarity, and their reputation for excellence in quality helps to bring a big price. Just as soon as I can work some of my creek-bottom ground I am going to try Bermuda potato-growing. It will be just the thing for my test-grounds for the different varieties of early potatoes. I would particularly emphasize having the ground soft and loose and deep, and keeping it so during the whole growth of the patch. Not only keep the horses from tramping it, but do not tramp it yourself more than is necessary to cultivate it in the manner I have described. The various hand cultivators have been tried in Bermuda, but they claim they can get along almost as fast with the fork, and do the work ever so much better. I suspect this method of cultivating is pursued in many other foreign countries, for I have seen my German and English gardeners handle the fork very much in the way these Bermudans do.

Our good friend Terry has been severely criticised, and sometimes by our experiment stations, because he constantly declares he wants only one potato-stalk in a hill, and hence his cutting to one eye. The Bermuda people have been practicing this for at least a hundred years. Their potatoes, when the blight does not bother them, are almost all marketable. Many of them will be the size and very much the shape of a common baseball—rarely larger.

Now, friends, you who have gardens in towns where land is worth several hundred dollars an acre, get to work and see if you can not grow potatoes Bermuda fashion. While you are about it you want to plant some onion seed, and have a good lot of plants ready, and in our next I will tell you about growing onions Bermuda fashion.

GARDENING IN THE MIDDLE OF MARCH, 1898.

We are just now having one of our pleasant surprises—at least it is pleasant to me. It is a mild spell of weather, without even a bit of frost nights, right in the middle of March. The doors and windows are open, and have been for several days. It affords us a grand opportunity to start our cold-frames and to get in seeds and plants. But when the frosts come again, as I presume of course they will, we shall have a hustling time to get every thing covered. I got a carpenter to help the boys, and we have been busy making the beds *tight*. The frosts we have are pretty sure to pull to pieces the beds, especially around the corners and joints; and if you want your stuff to stand severe late freezes, you want your beds snug and close. A cold-frame made of inch boards for the sides, covered with a close well-fitting sash, will keep out almost any frost after the middle of March. But there must be no cracks nor crevices of any sort. The sash must lie down tight on the smooth level surface of the boards that inclose the bed. The corners must be nailed up snug and tight; all cracks and knot-holes must be well battened. Our beds where we put on tarred paper, and then common shingles over the tarred paper, are very efficient in keeping out frost. There must be no broken glass. One hole in a sash will let in frost enough to kill the plants for several feet around it. We never use any mats or outer covering, and very seldom a shutter over the sashes. And, by the way, shutters will do very well now in place of glass sash; but you must pull them off so as to give the plants light whenever the weather is above freezing.

Our crimson clover has once more wintered beautifully. In fact, on the ground where it shelled out and seeded itself last summer there is a heavy green sod of crimson clover. I do not know what it will do when it comes to blossoming, having so many plants crowded so closely together. With me it is no longer an experiment, wintering over crimson clover. On our thoroughly underdrained rich clay soil, if the seed is put in in July or August, and the work is done properly, I am sure there is hardly a chance for failure. We are going to plow it under for potatoes when it is in full bloom, or perhaps when well on toward seed. The seed is offered so low now that I think it is worth more as a fertilizer than to sell in the market.

You might think we have had no weather to throw things out; but the strawberry-plants that were not mulched have been thrown out by the frost badly, especially the potted plants in the jadoo fiber. Those we put in late, some of them came clear up on top of the ground—jadoo fiber, bushy roots, and all; but before they had sustained any injury we discovered it and pushed them back into the ground again where they belong. Of course, the next frost may hoist them out again. That will depend on the weather. But the plants that are set in the jadoo fiber should be planted out early enough in the season so the roots can get out and get a firm hold in the clay soil, or else they should be thoroughly mulched. We did not mulch our plantation where we put the plants two feet apart from center to center, because I wanted to give them good cultivation right along; and, in fact, we have gone over them once with a hand cultivator already this 11th day of March. Of course, at this close distance runners must be kept off as fast as they make their appearance. The plants put out in August or September almost all hold their places, or at least have so far. It was those planted in October or later that came out on top. Our strawberry-plants put out in beds that had a little steam heat are growing just beautifully; and the "Earliest" is full of buds and blossoms. Where they were kept still warmer there is green fruit already. We have branches of drain tile that carry our exhaust steam quite long distances; the amount of heat gradually grows less and less as the length of the tiles gets away from the main branch that carries the exhaust steam. In this way we have beds containing all degrees of exhaust steam heat, from so much as to be too warm for most plants, clear down to where the heat imperceptibly fades away into nothing at all. Strawberries, onions, and such like hardy stuff do best with just a little bottom heat.

GOOD ROADS AND WIDE WAGON-TIRES.

Our friends will notice an advertisement of metal wheels, now running in our journal. From the Electric Wheel Co.'s catalog we clip the following:

> Elaborate tests of the draft of wide and narrow tired wagons have just been completed by the Missouri Agricultural College Experiment Station, Columbia, extending over a period of a year and a half. These tests have been made on macadam, gravel, and dirt roads in all conditions, and also on the meadows and plowed fields of the experiment farm. Contrary to public expectation, in nearly all cases draft was materially lighter when tires six inches wide were used than with tires of standard width. The load hauled was in all cases the same, and the draft was most carefully determined by means of a self-recording dynamometer. The beneficial effect of the wide tire on dirt roads is strikingly shown in some recent tests at the station. A clay road, badly cut into ruts by the narrow tires, was selected for the test, as presenting conditions least favorable to the broad tire. A number of tests of the draft of the narrow tire were made in these open ruts, and immediately followed by the broad tires running in the same ruts. The first run of the broad tires over the narrow ruts was accompanied by an increased draft; the second by a draft materially less than the original narrow tire; third by a still greater decline, and in the fourth trip the rut was practically obliterated and filled. In another trial, when a clay road was so badly cut into ruts as to be almost impassable for light vehicles and pleasure-carriages, after running the six inch tires over this road twelve times the ruts were completely filled and a first-class bicycle-path made.

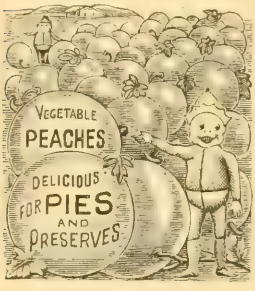
For several years I have been talking about getting a set of steel wheels for our heavy farmwork. To get a wheel as strong as our wooden ones, we found they would have to be very much heavier; and our teamsters objected, because they would have a heavier wagon to draw around when the roads are hard and solid. They also declared the wagon would pull harder when the roads are soft and everybody else uses narrow wheels. The reports from the Missouri Experiment Station, of which the extract above is a summary, seems to indicate that there are very few conditions under which the draft is harder on the team, and their experiments were made with a self-recording dynamometer, which seems as if it must be conclusive. There is another objection: The wide steel wheels are much smaller in diameter, and it takes more power to run over small stones or other obstructions, or over a rough road, with a small truck-wheel than with a large wheel. The dynamometer, however, declares, notwithstanding this, that the load pulled easier with the wide tires.

I can say from practical experience that the wide tires are a great blessing to the cyclist. In making long distances I have frequently followed in the track of a wide-tired wagon-wheel for miles; and it really made me feel bad when the vehicle turned into the barnyard of some progressive farmer, for then my wheel-track was gone. We have wide tires on our manure-spreader, and we also have steel wheels on some of our Eclipse and other implements. My experience is that the steel wheel, even though it is heavier than the wooden one, gets banged out of shape easier than the latter, for I believe it is laid down in mechanics that a pound of hickory or oak will stand more hard knocks than a pound of steel —that is, under certain conditions; and the spokes and felloe of a wagon-wheel, it seems to me, constitute one of those conditions. You see I am not writing a puff for our advertisers; but I do want to get at the truth of the matter. I wish our farming friends who have the new wide-tired steel wheels would report. It has been suggested that we could have two sets of wheels, and swap them according to the weather or season. I would rather have two wagons; then I could tell pretty soon which one was the easier for the team.

Vegetable Peaches.

This vegetable wonder is a most delicious fruit, size, shape, and color of an orange, thoroughly tested, succeeds everywhere, and matures from the seed in 80 days from planting. Flesh beautiful snow white, tender and melting; far superior to citron for preserves; excellent fried same as egg-plant; nice for slicing, and for mangoes and sweet pickles have no equal. Many consider them even better than peaches for pies, etc., as they possess a fine, tart, spicy flavor.

You can not imagine their exquisite quality —nothing like them under the sun. Extremely early, of the easiest culture, and marvelous yielders, so completely covering the ground with bright golden fruit as to excite the greatest astonishment and admiration. Do not think of making garden without planting vegetable peaches. They are a treasure anywhere, and quite indispensable where fruit is scarce or likely to fail.



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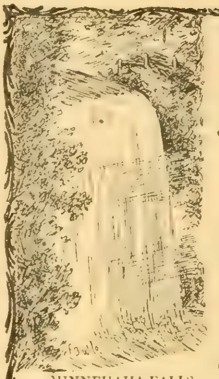

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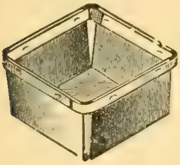

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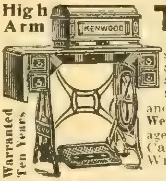

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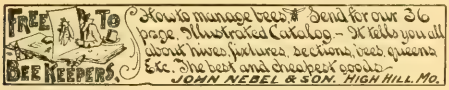

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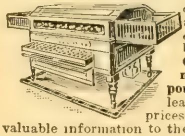

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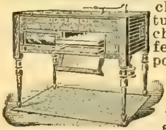

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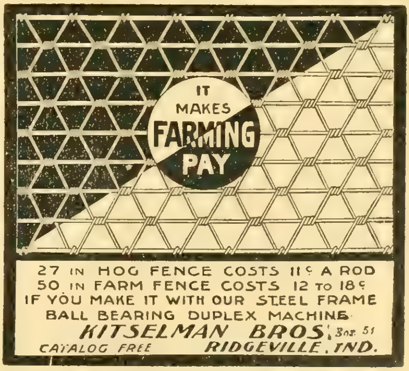

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BEVERIDGE MFG. CO., Baltimore, Md.

In writing, mention Gleanings.

1898 High Grade **BICYCLES**

for Men, Women, Girls & Boys. Complete line. *All brand new models.*
$75 'Oakwood' for $32.50
$60 'Arlington' " $24.50
Others at $15, $17 and $20
Juveniles $7.00 to $12.50

No Money in Advance.
WRITE TODAY for SPECIAL OFFER.

Shipped anywhere C.O.D. with privilege to examine. Buy direct from manufacturers, save agents & dealers profits

Large Illus. Catalogue Free. CASH BUYERS' UNION,
162 W. VanBuren Street, B-345, Chicago, Ills.

In writing advertisers, mention GLEANINGS.

SPRAYING with our new **KEROSENE Sprayers** is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.
West'n Ag'ts, Henion & Hubbell, Chicago.

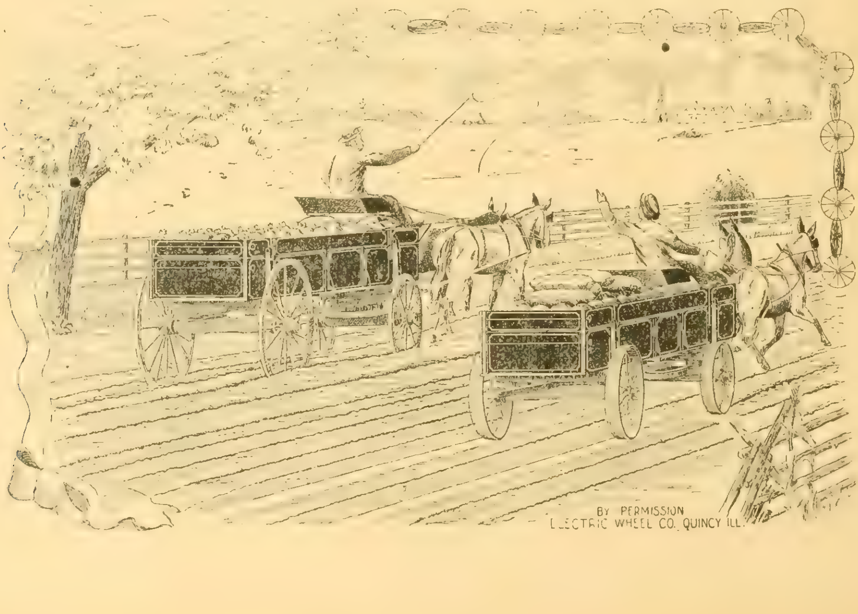
In writing, mention Gleanings.

GOOD WHEELS
MAKE A GOOD WAGON.

Unless a wagon has good wheels it is useless. **THE ELECTRIC STEEL WHEELS** are good wheels and they make a wagon last indefinitely. They are made high or low, any width of tire, to fit any skein. **They can't get loose, rot or break down.** They last always. Catalog free

Electric Wheel Co., Box 95, Quincy, Ills.

In writing, mention GLEANINGS.



BY PERMISSION
ELECTRIC WHEEL CO. QUINCY ILL.

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Honey Column.

CITY MARKETS.

CHICAGO.—White clover, comb, 11@11½; dark, 8@10; extracted white clover, 6@6½; amber extracted, 5@5½; California extracted, 3@3½ for coast. Market is *waiting*.
AMERICAN BROKERAGE CO.
March 21. Chicago, Ill.

COLUMBUS.—Large sales of honey are now out of the question. Retailers are buying very light, and result is lower prices. Good grades of amber still move at quotations, but white clover at over 11 and 12 is unsalable. Fancy white, 11@12; No. 1, 10@11; amber, 8@9.
THE COLUMBUS COMMISSION & STORAGE CO.,
March 23. 409–413 N. High St., Columbus, O.

DENVER.—Our honey market remains about the same as last quotations. Best grade of comb honey, in cartons, 11½; No. 1 white, extracted, 6. We are having splendid demand for our brand of comb and extracted honey.
R. K. & J. C. FRISBEE,
March 21. Lock Box 1014, Denver, Col.

BUFFALO.—Fancy honey, 10½@11; A No. 1, 10@10½; No. 1, 9@10; No. 2, 8@9; No. 3, 6@6½; dark, 5@5½; strained, 5½@6; tumblers, 85@90. Trade is very slow for comb; strained and tumblers of extracted selling pretty well.
W. C. TOWNSEND,
March 17. Buffalo, N. Y.

MILWAUKEE.—The supply of honey, both comb and extracted, continues ample to supply all demands upon us, although we find the *best* section stock is not as plentiful as the other grades. The demand has been very fair since last reports, and we will quote fancy 1-lb. sections, white, 11@12; A No. 1, 10½@11; No. 1 amber, 9@10; dark, 7@8; extracted white, in barrels, kegs, and cans, 5½@6; extracted amber and dark, 4@5; beeswax, 25@27.
A. V. BISHOP & CO.,
March 21. Milwaukee, Wis.

MINNEAPOLIS.—Can advise shipments of honey now. Fancy white-clover comb, 10½@11—would be a good time for extracted. There is an over-supply of dark grades, which are selling from 7 to 8. Let the fancy white come in. Extracted fancy white, 5½@6; amber, 5; dark, 4@4½.
S. H. HALL & CO.,
March 18. Minneapolis, Minn.

PHILADELPHIA.—The recent warm weather has stopped the sale of honey; very little call for comb honey; only moderate call for extracted; beeswax in big demand. We quote No. 1 comb, white, 10; amber, 9; extracted white, 5½; amber, 5; dark, 4; beeswax, 27. We are producers of honey, and do not sell on commission.
WM. A. SELSER.
March 21. 10 Vine St., Philadelphia, Pa.

CHICAGO.—Very little demand for honey in the comb, as the season is about over for its sale in any quantity beyond a case or so at a time; many retailers refusing to carry it in stock owing to sales being infrequent. Prices asked are 10c for best grade of white; 8*a*9 for No. 1 or fair grade of white; ambers, 7@8; dark, same; extracted, 5@6 for white; amber 4@5, and 4 for dark and buckwheat; beeswax, 27.
R. A. BURNETT & CO.,
March 21. 163 South Water St., Chicago, Ill.

DETROIT.—Fancy white lower, and quoted at 11; A No. 1, 9@10 No. 1, 9; fancy dark, 7@8; No. 1, 6@7; extracted white, 5@6; dark, 4@5; beeswax in good demand, and quoted at 26@27. There will be some undesirable lots of dark and dirty honey left over.
March 22. M. H. HUNT, Bell Branch, Mich.

KANSAS CITY.—The supply of honey is larger; demand fair. We quote fancy white, 1-lb. comb, 9@10; No. 1 white, 9; amber, 8@9; extracted white, 5@5½; amber, 4@4½; dark, 4; beeswax, 20@22.
C. C. CLEMONS & CO.
March 21. Kansas City, Mo.

CINCINNATI.—There is a fair demand for extracted honey with insufficient supplies on the market. Prices range from 4 to 6 on arrival, according to quality. Demand for comb honey is slow at 10@13 for best white. Beeswax is in good demand at 20@25 for good to choice yellow.
CHAS. F. MUTH & SON,
March 21. Cincinnati, O.

FOR SALE.—Cheap, 5 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

FOR SALE.—800 lbs. comb honey in non-drip crates.
L. WERNER, Edwardsville, Ill.

FOR SALE.—Extracted clover honey, in 60-lb. cans, f. o. b. at 6c.
C H. STORDOCK, Durand, Ill.

FOR SALE.—White-clover and buckwheat honey. Send for samples and prices. I think that I can please you.
M. W. HARRINGTON, Williamsburg, Ia.

CHAS. ISRAEL & BROS.,
486, 488 & 490 Canal St., Corner Watts St., N. Y.
Honey and Beeswax.
Liberal Advances Made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

For Sale.
Adel or Italian bees on Quinby suspended frame. f. o. b. in light shipping-boxes, $4.00 each. Blacks and hybrids on L. frames, $3.00 each. No veil used in handling these bees during the past season. No foul brood in these parts. 150 colonies to select from.
CHARLES STEWART, Sammonsville, N. Y.

TO ONE AND ALL!
QUEENS, strictly five-band or Golden Beauties.
Untested, 50 cents. Tested, $1.00.
TERRAL BROS., Lampasas, Texas.

FOR SALE.—One-half interest in five hundred colonies of bees. Good opportunity for a man with some money. Finest location to be found in the alfalfa district.
JOHN A. HARRIS, Harris, Col.

In writing advertisers, mention GLEANINGS.

SPECIAL NOTICES BY BUSINESS MANAGER

GLOBE BEE-VEILS.

Our stock of globe bee-veils is entirely exhausted. When we bought out Thos. G. Newman, some two years ago last September, we took a stock of about 3000 of these veils. The Klondike craze has greatly stimulated the trade recently or we would have had enough to run us through this season. We are negotiating for more, and hope to be supplied before the end of April.

BEESWAX ADVANCED.

The general market for beeswax will warrant our advancing one cent a pound the price we pay. Until further notice we will pay for average wax delivered here 26 cts. per lb. cash; 28 in trade. For choice selected yellow we usually pay from 1 to 2 cts. per pound extra. In shipping wax be very careful to nail up the boxes or barrels securely. If shipped in sacks they should be double and quite strong. Not infrequently considerable wax is lost in transit through carelessness in putting it up for shipment.

MAPLE SUGAR AND SYRUP.

This season has been most unfavorable for the production of the sweets from the sugar maple, and those who have succeeded in producing some have been prevented by almost impassible roads from bringing it to market. As a consequence we have not as yet been able to fill very many of the orders we booked early in the season. If we get any at all, we shall probably have to pay more than the prices we have offered it at. We withdraw all prices heretofore made, and when we get a supply we will name new prices.

CARLOAD SHIPMENTS.

March first we shipped the first car for the season to Geo. E. Hilton; and as we go to press we are shipping the second. Between these two we have shipped a car to O. P. Hyde & Son, Hutto, Texas; one to each of the five branches running in our name; one to Rawlings Implement Co., Baltimore, Md., the larger part of which was for Dundee, Scotland. One car to Jno. Nebel & Son, High Hill, Mo.; one to Liverpool, Eng.; another to London, Eng. We are also loading two more cars for export, mostly for Australia. We have shipped, besides, three other cars of goods during the month. By computing the weight of less than carload shipments I find they amount to a carload every two days. We are at present shipping four full carloads a week, besides these smaller shipments. We have orders booked for all the carloads we can get off during the month of April, and very nearly as many less than carload orders as we can ship. We have already bought four carloads of goods from other factories to help us out, and are negotiating for more. Notwithstanding the fact that last year brought us the most business we ever had, we have, up to April first, this year, shipped twenty more full carloads than last, as well as a great many more less than carload shipments.

BUSINESS AT THIS DATE.

A month ago we hoped by this date to be able to report that we were catching up, so that we could handle orders more promptly. The increase in the demand over any former year is so great that we have hardly held our own during the past month; and, notwithstanding we have shipped a great many more goods during the month than we ever did before in the same length of time, we have received orders for more goods than we have shipped. We realize that we are doomed to have a great many disappointed customers this season, because we are not able to serve them with reasonable promptness. For several weeks past we have discontinued sending out any wholesale lists in some cases, even to old agents and customers. We have declined one order for a carload for which we were to receive one thousand dollars, half before shipment, balance on delivery, and an old customer besides. We have turned away all orders for outside lines, from customers whom we have heretofore supplied for some time. We have a larger force at work than ever before—in fact, all we can possibly find room for, and are running the machinery day and night. If there is any thing we have not done that we can do to help supply the friends who send us their orders, we will try to find out what it is, and follow up that line.

In return we ask our customers to have all the patience they can muster; and if you can not wait we are perfectly willing to return your money, and let you try elsewhere. The Falconer Mfg. Co., at Jamestown, N. Y., are running over time, and unable to help us any. The Leahy Mfg. Co., at Higginsville, Mo., wrote us a short time ago that they were running night and day, and a month behind on orders. The Wisconsin factories are busy, although they may be able to handle more. The demand seems to be more than double what it was last year, and none of us were looking for or were prepared for such a tremendous increase. We are doing our best, which is all anybody can ask. The above refers only to *bee-hive materials.* Seeds, department-store goods, and every thing else except woodwork (that we manufacture), can go almost by return train. If you want your goods sent in two shipments—part at once, rest later—say so.

Special Notices by A. I. Root.

OUR TRANSPLANTING-MACHINE—REDUCTION IN PRICE.

We are having so many calls for the machine pictured on page 462 of last year that we are enabled to reduce the price to $1.25 from $1.50; two machines, $2.25. Of course, they can be made cheaper still if enough of them are ordered to enable us to make them in quantities.

SWEET POTATOES FOR SEED.

Now is the time to bed them—see directions on page 278. We have in stock Yellow Nansemond (or Jersey), Early Peabody (or Red Bermuda), the bunch yam (Gold Coin), and the General Grant. Price of the first, ½ peck, 30 cts.; peck, 45 cts.; bushel, $1.50; barrel, $4.00. Price of the other three, ½ peck, 40 cts.; peck, 60 cts.; bushel, $2.00; barrel, $5.00. Barrel orders will be shipped directly from the grower; for one bushel or less they will be shipped from here. If wanted by mail, 20 cts. per pound, postpaid. By freight or express with other goods, 10 cts. per pound.

VEGETABLE-PLANTS.

Of these, we have ready to send off: Jersey Wakefield cabbage-plants, Snowball cauliflower, Prizetaker onion-plants, and White Plume celery-plants. We have some very nice tomato-plants ready to ship; but you would have to protect them with glass or otherwise unless you are further south than we are

There seems to be quite a demand this spring for the soja bean, and most dealers are holding it at from $2.50 to $3.00 a bushel. We have just succeeded in getting 20 bushels from the South, where it was grown, so that we can furnish the seed at the low price of $2.25 a bushel. We have just filled an order from our Ohio Experiment Station for 10 bushels. Here is what Prof. Hickman says in regard to it:

> I am thinking now of trying the soja bean on a larger scale than ever before, as a crop to plow under, putting them on this spring instead of oats, and plowing down for wheat this fall. J. F. HICKMAN.
>
> Ohio Ag. Exp. Sta., Wooster, O., March 18.

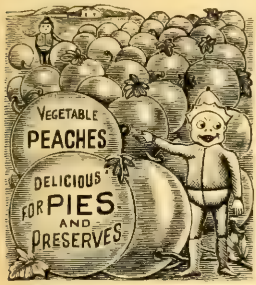
SEED POTATOES.

Please notice the very low prices we have on choice potatoes by mail—Bovee, Thoroughbred, Early Ohio, etc. We can furnish every thing in our printed list of potatoes, with the exception of Burpee's Extra Early and Early Norther. Many of the other kinds are pretty *nearly* out, however. We have the largest quantity of Freemans, grown by T. B. Terry, of any one kind; and in my opinion the Freeman potato is the best in quality of any potato at present in the world; and on our ground, when planted late, it gives almost as good a yield of these extra nice potatoes as any of the others The Monroe Seedling, Rural New-Yorker, and Sir William, at only $2.50 a barrel, we consider a bargain. We are sold out of White Bliss, and have had to send away up north to the State of Maine to get more; therefore we shall have to put a higher price on them than what we have been selling them at—probably $4.50 a barrel for firsts and $3.50 for seconds.

Our seed-potato seconds are all sold out except a very nice article of Monroe Seedlings at $1.50 per barrel, and four or five barrels of New Queen at $1.50 per barrel. Our Summit Co. potato-growers—at least a good many of them—pronounce the Monroe Seedling equal in quality, shape, and yield, to any of the newer or high-priced varieties; and for an early potato, on our grounds, we have better success with the New Queen than any other I know of. Of course, we have never tried the Bovee enough to compare it fairly with the New Queen. I presume the Bovee would stand first as an extra early potato.

Vegetable Peaches.

Do not think of making garden without planting the new Vegetable Peaches. They succeed everywhere, and grow from the seed in 80 days. They are a treasure.



"Better than peaches for pies and preserves."
Mrs. B. F. Moore.

A Wonderful New Fruit.

A wonder and no mistake. Everybody should grow them. G. Street.

Perfectly Delicious.

"Crop yielded over 1100 bushels per acre."
B. R. Blackwell.

Nothing like them under the sun. Easy to grow—producing immense crops everywhere. May be planted as late as the middle of June.

Headquarters seed, large packet with full directions, use of fruit, etc., also Seed Catalog of Bargains, all for one dime, or 12 cts. in stamps. Order at once and surprise your friends with one of the greatest novelties introduced in the past 40 years. ☞ Superb Giant Pansies (50 varieties) free with orders naming this paper.

Address A. T. COOK (Seedsman), Hyde Park, N. Y.

We are Headquarters for the Albino Bee. The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italians, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

Prosperity.

It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
FREMONT, - - - MICHIGAN.

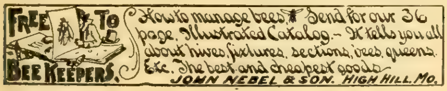
SEND FOR IT. My new book on **Queen-rearing** will be ready April 1st. Queen-rearing brought down to 1898. It tells how to rear queens in the brood-chamber while the queen has the freedom of the combs. Price 25 cents by mail. Address

HENRY ALLEY, Wenham, Mass.

Write Quick for circular of Cole's Garden-plow. Best in use.
G. W. COLE, - - - Canton, Ill.

Young, warranted, either three-band or golden queens, $1.00. Two yards. Tested, $1.00 up. Circular free.
J. B. CASE, Port Orange, Fla.

CHEAP FOR CASH. Italian bees and queens and Root's supplies. Address OTTO KLEINOW,
122 Military Ave., Detroit, Mich.



FREE TO BEE KEEPERS.
How to manage bees. Send for our 36 page, Illustrated Catalog.— It tells you all about hives, fixtures, sections, bees, queens. Etc. The best and cheapest goods—
JOHN NEBEL & SON. HIGH HILL, MO.

Wants and Exchange Department.

WANTED.—To exchange second-hand 60-lb. cans, boxed and in good condition, valued at 25c each, laid down, for extracted honey (crop of '98) at the market price. Special rates on large quantities.
B. WALKER, Evart, Mich.

WANTED.—To exchange some fine collie-shepherd pups for something you have. I should like some pure beeswax and some empty bee combs or any thing I can use. Let me know what you have to exchange. I also have some extra-fine pit game bantam chickens to swap. Will exchange for almost any thing except poultry. W. S. BRILLHART, Oakwood, Ohio.

WANTED.—To exchange White L. eggs for a few queens. H. BARBER, Birdsall, Mich.

WANTED.—Gardener and bee-keeper. Young man of good character and habits, sober and industrious, who has had experience both in gardening and in the care of bees. Situation is in Northern New Hampshire. Address, giving references and stating wages desired. M. J. SULLIVAN, Littleton, N. H.

WANTED.—To exchange for merchandise and farm produce, fine 5-acre Florida orange-grove and home, good one and four horse-power boilers and engines, gearing and shafting, $1500 dime museum, immense collection, and elegant $100 concert graphophone outfit complete—will clear $10 daily at resorts and in cities. W. I. COOK, Haledon, N.J.

WANTED.—To exchange 1200 T tins, 19½ inches long, for second-hand bicycle or offers.
W. H. M., Box 133, Worcester, N. Y.

WANTED.—To exchange one marine telescope, four-horse engine and boiler, stereopticon outfit, dissolving, with views; photo outfit for gallery, power planer, for nursery stock, peaches, pears, and plums, or offers. W. H. WORLEY, Keokuk, Ia.

WANTED.—Experienced young man to take charge of 100 colonies of bees for share of crop.
J. B. FERGUSON, Tracy City, Tenn.

WANTED.—Rat-terrier dog in exchange for supplies. I want a small rat-terrier, black and tan, not over 8 inches high, for my 7-year-old boy. It must not be more than two years nor less than one year; must be kind, playful, and intelligent. Write me what you have before sending.
Address E. R. ROOT, Medina, Ohio.

WANTED.—Sober, industrious married man to take place of 10 acres, A No. 1 land, and my bee business on shares. Stock, tools, and every thing needed. On or before May 1st. JAS. E. WAY, Clove, N. Y.

WANTED.—To exchange an American gold-filled watch, 11-jeweled quicktrain Trenton movement, open face, stem wind and set, for bees, in 3-frame nuclei. Write at once.
P. W. STAHLMAN, Negley, Ohio.

WANTED.—To exchange rifles, shot-guns, etc., for trio of minks from New England States.
W. S. AMMON, Reading, Pa.

WANTED.—To exchange barrel spraying-outfit, nearly new, in good order; also folding bee-tent and Bliss telephone complete for breech loading shot-gun. W. C. SIMONS, Arlington, Wayne Co., Pa.

WANTED.—Bees in exchange for 40-acre farm.
R. S. BECKTELL, Bellaire, Mich.

WANTED.—A shingle-mill.
W. S. AMMON, Reading, Pa.

WANTED.—To exchange for bees, Italian queens, or offers, one 18-in. stone feed-mill, nearly new, and in good condition; will grind 20 to 30 bu. per hour. Also corn-shellers and elevators.
C. B. HOWARD, Romulus, N. Y.

WANTED.—To exchange Black Langshan eggs and chicks, raspberry and strawberry plants for Italian bees. Write A. M. ALLEBACH, New Bethlehem, Pa.

TWO SPECIAL OFFERS.

As explained in former ads., publishers can afford to put forth extra efforts in securing *new* subscribers, as the majority remain, once they become subscribers to a *good* journal. It is from this point of view that I make the following offers:

OFFER NO. 1.

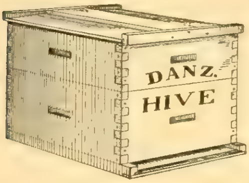
To any one not a subscriber to the Review who will send me $3.00 I will send the Review for 1898, and 1000 strictly first class snow-white one-piece sections. After accepting this offer, if any one wishes to buy more sections I will furnish them at the following prices: 1000 for $2.75; 2000 for $5.25; 3000 for $7.50; 5000 for $12.00. Sections will be shipped from any of the following points: Flint, Mich.; Chicago, Ill.; Medina, Ohio; Jamestown, N. Y.; Higginsville, Mo., or Omaha, Neb.

OFFER NO. 2.

To any one not a subscriber to the Review, who will send me $1.50, I will send the Review one year and a fine TESTED Italian queen. Purchasers may have either the bright golden strain, or the dark leather-colored reared from imported mothers. After accepting this offer, if any one wishes more queens they will be furnished at the following prices: Single queen 90cts.; 3 for $2.65; 6 for $5.00; 12 or more at 75 cts. each. Orders will be filled in rotation, and safe arrival guaranteed.

Unless otherwise ordered, subscriptions will begin with the Jan. issue; and the Dec., 1897, number will also be sent free. If you are not acquainted with the Review, and wish to see it before subscribing, send ten cents for three late but different issues, and the ten cents may apply on any subscription sent in during 1898.

W. Z. HUTCHINSON, Flint, Mich.



$100

Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,** or F. DANZENBAKER, Box 466, Washington, D. C.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

Philadelphia Branch of

THE A. I. ROOT CO.,

10 Vine Street.

Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

Booking orders for Nuclei and Italian Bees for shipment. Write for prices.

In writing, mention Gleanings.

PRICES OF

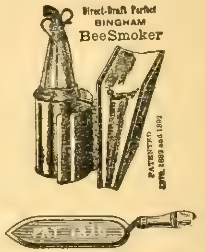
Bingham Perfect Bee-smokers and Honey-knives.

Smoke Engine (largest smoker made.)	4-inch	stove.	Doz. $13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	" 9.00;	"	1.10
Conqueror	3-in.	"	" 6.50;	"	1.00
Large	2½-in.	"	" 5.00;	"	.90
Plain	2-in.	"	" 4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	" 4.50;	"	.60
Honey-knife			" 6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

In writing advertisers, mention GLEANINGS.

1000 Bee-books to be Given Away!

Do YOU Want One of Them?

If so, send your name and address on a postal card to the undersigned, and get a free sample copy of the old **Weekly American Bee Journal** with information as to the book, which retails at 50 cents, but you can get it *free*. It is a new edition of "BEES AND HONEY," has 160 pages, and is a good book to have, especially for the beginner. Better write to-day, and say you saw this advertisement in GLEANINGS. Address

GEO. W. YORK & CO., - - 118 Michigan St., Chicago, Ill.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
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STRAY STRAWS FROM DR C. C. MILLER

TO CLEAN about 2200 T tins took 2½ hours, using 3 cans concentrated lye, with hot water, metal tub, and a pair of tongs.

IN ENGLAND, two different separators for use with plain sections have been patented, and a third is on the way.—*Brit. Bee Journal*.

TOO THIN, Mr. Editor, is what you think a 5x4¼ section would be. With a fence, to hold the same as an old-style 4¼x1⅞, it would be 1⅓ wide—pretty thin, but not quite so thin as bees seal honey in brood-combs. [I was referring not so much to the thickness of the comb as to the relation of thickness to surface.—ED.]

I LIKE HUTCHINSON, and don't want to make him mad. If it weren't for that I'd cast up to him that some one about his length hinted that there wasn't much likelihood of new things, or something of that kind, in the future. Fences, section-cleaners, tall sections, plain sections, and all that, make this one of the "newest" times we've ever had.

A. I. ROOT, when you reached home you were able to eat buckwheat cakes and molasses, p. 227. Were you out of honey? [No, I do not think he is out of honey; but I am sorry he likes maple molasses better than he does the product from the hive, and yet he confesses that honey is far more wholesome for his condition of health than maple sugar.—ED.]

ALL THE SECTION-CLEANERS seem to use sandpaper. I'm watching for one that won't have that trouble and expense—perhaps a metal plate with a surface like a rasp or file. [So am I watching for the same thing. I am just a little afraid that the sandpaper will fill up. It has not done so in the limited trials I have made of it; but somehow it seems as if it *must* do so.—ED.]

DOOLITTLE advises a good workman with the necessary tools to make all his needed wares after starting, except sections, p. 220. Doolittle! I'm a good workman, and I can borrow what tools I lack; but if I can get a job of sprouting potatoes at 10 cts. an hour I believe I can save money to buy my hives and other "fixin's." [I hope you will fight it out with Doolittle. We will furnish the arena. And the red rag—well, you are holding it up yourself.—ED.]

THAT WISCONSIN FOUL-BROOD LAW is all right so long as men like France and McEvoy are appointed; but if you have governors like we've been having in Illinois, there's no security you'll not have an inspector that doesn't know a queen from a drone. [Yes, it is important to have a good man; but a good man without a good law is powerless to do much if any thing. York State, for instance, has plenty of good men, but it lacks the law.—ED.]

YOU EDITORS are all right not to say any thing about a man if you can't prove it, p. 223; but wouldn't it be a good thing sometimes to tell just what you can prove?—just to give us a hint, you know. [Oh! but we do, doctor. You may be sure that we invariably "squeal" on the commission men when we can prove our ground. When we do not come right out and give their names it is because we can not get the necessary evidence to prove our honest conviction.—ED.]

YOU WANT TO KNOW, Mr. Editor, page 204, what I think about the Doolittle-Golden disagreement. Well, I'll tell you. I think *you* are wrong. I don't know whether Doolittle or Golden is right, but I just don't believe both are. For if one of them in the hundreds of cases he has observed has never seen an exception to the rule that field-bees hand over their plunder to the nurse-bees, I can hardly believe that in other colonies the bees will all dump it in the cells. There's a mistake somewhere.

I. S. TILT seems to think scraping 150 sections a pretty fair day's work. I wish he'd figure a little when he'd get through if he had 18,000 or more to scrape. I may say to him that my scraping was thoroughly done, and 1200 wasn't an extra effort, just the regular number day after day that were scraped, graded, and cased by one person, besides grading and casing some scraped by others. But, understand, she didn't do any thing else; the sections were all placed before her, and the cases taken away.

YES, MR. EDITOR, that testimony of I. S. Tilt, p. 208, is right to the point, and not like Niver's. Mr. Tilt thinks I should throw up the sponge and confess section-holders best. Now, friend Tilt, I have a favor to ask of you. Please tell me *why* I should do as you say. After trying both, the balance of evidence with me runs the other way. I'm ready to change to wide frames without top-bars, just as I changed from them with top-bars, whenever I can see reason for the change. [That does me good. I like to see you take bad medicine without making a wry face. Now, friend Tilt, give him another—*tilt*.—ED.]

"ONE TROUBLE with the deep frame is that the bees will eat away all the stores next to the top where it is the warmest, and the bees sometimes die because the clusters are left high and dry."—Footnote, p. 214. Sa-a-ay. I saw that statement once before, and I thought the man didn't know what he was talking about. Do bees honestly do that way? [What is the matter with the statement in question? Explain *why* you thought the man did not know what he was talking about. "Do bees honestly do that way?" They do indeed, sir, sometimes, at least in our apiary, even on frames as shallow as the Langstroth; and I figure it would be worse if the frames were deep. But look here, doctor—you always winter in the cellar, while *we* almost invariably winter outdoors. See?—ED.]

YOU'RE ALL STRAIGHT in your data, with one exception, page 205, Mr. Editor, about separators, but wrong in your conclusions. You're right in saying I throw away separators after using one season because it costs less to buy new than to clean old, but not to take the naughty kinks out of them. The naughty kinks are only in bad separators; they're there from the start, and you can't get them out. A good plain separator is "good for years" if you clean it, and a fence separator will be thrown away after being used one year if you can buy new cheaper than to clean. See? [No, I do not see. It will never be cheaper to throw away a fence separator and buy a new one than to clean the old one. While fences will probably be cheaper than now, I anticipate the labor of cleaning, if cleaned at all, will be less — a good deal less — than the labor of cleaning the old-style wooden separators.—ED.]

THAT'S A PRETTY FIGHT, p. 212–'13, over the plain section and fence, but it seems to me there are some misses and fouls on both sides. Fight fair, loving brethren; fight fair. [You are very unfair, doctor, to accuse either one of us of not fighting fairly, and then softsoap us both by calling us "loving brethren." You ought to know that, if there was one of us who would not fight fair it would be the "other fellow," of course; but it "breaks me all up," as I made a mistake in my arithmetic, for I can imagine Doolittle chuckling to himself. But then, my point was true, all the same, but not quite so big in degree. You just wait. When you and Doolittle get to fighting over that bottom-board, if I don't find some "misses" and "fouls" it will be because there are not any to be found. We are preparing the arena now. As umpires I'll appoint Hutchinson and York. Now, then, here is the red rag; but be sure to fight fair, loving brethren.—ED.]

WHAT'S THE MATTER with you, Mr. Editor? You're mixed up because I use 15-oz. sections, and think my practice should correspond with my preaching. It does. I preach that 15 oz. shouldn't be sold for a pound, but for 15 oz., and I practice what I preach. I'm studying on the problem of changing to something lighter. But your mixed-up-ness, I suspect, has led you to think 1½ or 1⅜ the width of section to contain comb such as bees would build of their own sweet will. In this locality a 1⅝ section will contain comb the same as in brood-combs spaced 1⅜. According to what Doolittle has observed, a 1¾ section is the right size for such comb as bees naturally build. There isn't as much difference between a 1⅞ section and what the bees would prefer as most people, editors included, imagine. [I am mixed up worse than ever. You can preach all you have a mind to that 15 ounces should be sold for 15 ounces; but, as sure as fate, every 15-ounce section you sell is liable in some markets to be sold for a pound. No, you can not be consistent until you adopt either the two-inch section or the 1⅜ or 1⅝.—ED.]

WHAT'S THE REASON no one ever gave us that kink of Coggshall's before — making combs swap places in the extractor? I always lifted out one comb, twisted it around, daubing things as I did so, then went through the same thing on the other side. Seems to me Coggshall's way is a good deal quicker, with less daub. [In the case of the ordinary extractor, where the combs are put down into the machine endwise, I am rather of the opinion that the ordinary way would be quicker than the Coggshall. I wish some of our extracted honey men who have possibly tried both methods would tell us which is the better. It is these little things that we want to know about, and it is these little short cuts that save the pennies and the *dollars*. One of the valuable things in Miller's "Year among the Bees"—a book now out of print just because the doctor won't take time enough to revise or re-write it—was that he took pains to go into the minute details. I'd like to know, among other things, just how one fills his smoker; and whether, in working over a hive, he sits down or stands up; and whether he uses bee-veils or gloves, or both; whether he kicks the super off, slap-bang fashion *a la* Coggshall, or takes time to pry it off, using smoke, and a whole lot of other things too numerous to mention.—ED.]

WHAT FOR do you let that proof-reader get at me, Ernest, p. 205, with his legal spelling? I own up, I see it would be all wrong if we couldn't decide exactly the shade of meaning by the spelling. But say, W. P., don't you think there's something lacking yet? Ought there not to be an extra frill in the spellings of "quean" and "queen"? If Ernest writes me he saw you with a "quean," how in the world am I to know by the spelling whether it was a bad woman or a Scotch girl? And how can I tell whether a "queen" is a bee or a woman? Then a whole lot of words now spelled all the same way should be changed. "Tree" should have three or four different spellings, "horse" five or six, and "dog" at least a dozen. Fact is, most of the words that sound alike are spelled wrongly, aren't they? [Don't be afraid of the proof-reader, doctor; he's your best friend. Your points are all interesting, and well taken. Our language has been a dumping-ground for all others for so long a time that it is not strange we have some words that are pronounced alike, and yet have very different meanings. As for a man being seen in company with a "quean," the word would have to be interpreted by what Andy Johnson used to call a "past record." Taking into consideration the average color of her hair, it would be better not to use ambiguous words in speaking of a Scotch girl (in her presence)—just call her a "bonnie lassie." Really, it is fortunate that the spelling of words having a similar pronunciation is as variant as it is; and to make the spelling absolutely alike should rather be deprecated than encouraged.—READER.]

CALIFORNIA ECHOES

BY J. H. MARTIN.

The complaint about bee-paralysis, which was so general a few years ago, is evidently disappearing. We have had as much of it in California as anywhere; but at our recent meetings there was not interest enough in the subject to cause a discussion. The same might be said of the nameless disease. They are evidently on the wane. We wish we could say the same about foul brood.

There must be a mistake somewhere about that great honey yield put to the credit of Mr. C. A. Hatch. In a recent number of the *Land of Sunshine*, published in this city, there is a statement that Mr. Hatch secured $1500 for the season's labor. A few days ago I saw Mr. Hatch, and learned from him personally that his honey sold for about $800. He said that he would like to see the other $700.

I have just run across another evil under the sun. This time it is not adulterated honey, but it is an adulterated honey-package. Just consider a pound and a half of honey in a pound and a half bottle. There is enough glass in the make-up of the bottle to make half a dozen bottles. Cost of bottle, 4 cts.; cost of honey and putting it into the bottle, 7 cts.; sells for 20 cts. Very good profit, and mostly on glass.

Mr. Thos. W. Cowan says that there are many amateur bee-keepers in England. In the payment of their dues they think nothing of paying double or treble the amount asked. Such liberality gives backbone to the organization. I suppose, owing to our national newness as compared with the age of Britain, we are in a sort of gristly state yet. There are no hopes that the present generation will see much more backbone than we have at present.

Mr. Editor, I wish to enter a protest against the method Mr. Golden uses to illustrate his machine, see page 132. I have tried to find the useful points in the machine, but never get further than the beautiful young lady in the foreground who is looking right at a fellow. Take her away so I can study the machine. Stop my paper. [Didn't think of it before, but Golden must have had his eye on you. So you've been caught in the trap? Tired of making flap-jacks and keeping bachelor's hall, eh?—ED.]

The usual method recommended for the cure of a bad case of bee-stings is to fill the patient up with whisky. Dr. Gallup says, in the *A. B. J.*, that a wet-sheet pack is more harmless, and very effective. Horses badly stung can be treated in the same way. That is a good thing for all Californians to remember, for there is a number of horses stung to death in this State every year. Even rattlesnake bites are successfully treated with the cold-water method. Hurrah for cold water! [Here too—hip! hip!—ED.]

We believe that there is not an amateur bee-keeper in California. If there is one we hope he will send in his name. We should like to point with pride to such a curiosity, especially if he would come down with the cash every time in good English style. Now just look at these figures; this, Los Angeles Co., has about 300 bee-keepers; only 25 of this number were in attendance at our State Association. At the last County Association meeting there were not enough present to form a quorum for the election of officers; only 10 necessary for a quorum. The bee-keepers are not taking as much interest in the organizations as they should.

I wish to inquire if anybody knows more than I do about the effect of the X ray on honey. At an experimental lecture upon the X ray in this city the lecturer requested any person who had an article that he wished to place between the ray and the screen to do so. I had a mailing-block in my pocket, in which there were two bottles of honey. This was held up so that the ray had a fair chance at it. The block did not appear on the screen, but the two bottles stood out in bold relief. As to the effect on the honey, I did not see at the time that there was any difference; but that honey has not granulated up to date, and the experiment was made some four months ago. Will some one who has an X ray handy try the experiment upon various grades of honey, and honey that will soon granulate? The wonderful ray may have some effect in preventing molecular change.

It seems rather queer that some of our great bee-men should advocate the cumbersome cleat on hives, and prefer them to handholes (see Straw on page 166). The main use for it seems to be to carry the hives into the cellar. When I used to do such things in York State I could carry the hive, and with more comfort to myself and the bees, by grasping the hive at the bottom. When moving bees the cleat is a downright nuisance. In those immense loads that Mr. Mendleson moves, those cleats would take the space of twenty hives. Anybody can see at a glance that the handhole is a decided improvement—neat, inexpensive, and out of the way. Bee-men out this way want handholes in their hives, supers, shipping-cases, and cases for cans. The cleat is decidedly a back number, and Dr. Miller ought to *know that*. [I smoled another big grin when I read this. I hadn't thought of it before, but those naughty cleats must take up much valuable room at times.—ED.]

You would not expect that much unripe thin honey would be produced. You would naturally expect that a bee-keeper would think it for his interest to produce honey of the very best quality; but the contrary is too often the case in this State. Here are the excuses put forward by those who persist in producing unripe honey.

1. Thin unripe honey is a grade lighter in color than it would be if it remained on the hive until it becomes ripened.

2. We get more of it.

3. There is no uncapping, and it is less work.

That these reasons are fallacious the following will show:

Thin honey is liable to sour, and more or less of it will be a dead loss. The flavor is raw and unpalatable, and people who buy it once will not buy it again.

If more gallons are produced it is lighter in weight, occupies more cans; better let it ripen.

It is certainly easier work to extract combs that are not capped, but your cappings will give you good returns for the labor in the beautiful wax produced.

To get right down to the bottom facts of the case, it is pure shiftlessness to produce unripe honey.

I have a great respect for anybody who lives in my native State of New York. They do things about right back there; but somehow that Coggshall way of managing bees (see page 170) does not seem exactly right. There is a careful way and a rough way to do things, and in these times of wars and rumors of wars the careful way is considered the most civilized. Now, we guarantee that a careful bee-man would get just as much honey from his apiary, the surroundings would look better, the hives last longer, and the man feel better. The difference between the careful and rough handling of bees is often noticeable in this State, and our most successful bee-keepers are the ones who use a considerate amount of care. And now, Mr. Editor, I wish to ask if you really enjoyed such management, and are you going to run your apiary on the tip-over-kick-over plan hereafter? Another matter, there must have been thousands of bees in the honey; do you think it was improved thereby? Order is the first law of heaven, and it applies in the running of bees as well as in other places. I hope that Mr. C. will not shy one of those kicks at me. [I gave the Coggshall method without prejudice or favor. No, I don't think I'd like to work that way. It seems to me he would get as much honey with almost as little labor not to use the kick-over plan.—ED.]

Ridge-Pole Musings.

BROOD-COMBS.

Old Renewed by Bees; Spacing, etc.

BY R. C. AIKIN.

Much has been said about the age of brood-combs, and as to when they should be renewed. There seems to be a prevailing opinion that combs can be and are used twenty—yes, forty or fifty years, and still be good. I am not going to say to what age a comb may be used without renewing, for I do not know.

In melting old combs I have noticed frequently the cell bases were very thick, while the side walls seemed never to increase in thickness to any thing near the same degree. I have sometimes wondered why this was so. I could see some reason for an accumulation in the bottoms of cells while a bee was growing therein, but I could not understand why, under the law of gravity, such accumulation did not settle more to the *lower* side rather than to the midrib, or cell base, nor why the bees did not rake out all such accumulations as soon as the cell was vacated.

At this point I stopped writing, and spent some time in dissecting some old brood-comb. A simple cutting through the comb, exposing the cells so as to be viewed from the edge of the comb, showed very clearly that the bases of the cells were from two to four times as thick as the side walls. For reasons that will presently appear I expected to find that these thick bases were made up largely of small cup-like sections of cocoons, the top part or side walls of the cocoons having been removed. Having no magnifying-glass and delicate tools to handle these very fine films composing the cocoons, I was unable to determime fully this point; and while there appeared to be some such construction, the principal thickening seemed to be caused by deposits of some substance much like pollen—I suppose the excrement of the maturing bee, or a residuum of the food with which it was nourished. While I could not determine its composition, there was no trouble at all to see that it was not all cocoon filament. This excrement or residuum in the bases was evidently deposited there during the larval state of the maturing bee, at least before the spinning of the cocoon, so when the cocoon was finished the substance was beneath, and could not be removed without removing also the cocoon; hence the rapid thickening of the bases.

Four or five years ago, at a time when little or no honey was coming in, and when many colonies were without laying queens (having been unqueened, and young queens not yet laying), I noticed that about some entrances there was a great litter as if a mouse were in the hive gnawing at the combs. So great was the resemblance, with only a casual glance, that, had it been at a time when the hive would not be full of bees, and at a season when mice were likely to be in the hives, I should have decided at once that it was the work of a mouse. I determined at once to know what was going on there, and on opening the hive I found the bees tearing down the cells of old brood-combs right in the heart of the brood-nest, no brood being there because the queen was not laying.

Here was a case in which the bees were renewing their old brood-combs. The cells were gnawed down to the base and being rebuilt. I think I have a faint recollection of previously seeing the evidence of this work at hive entrances; and now having caught on to the fact I have many times since observed it in many colonies. Sometimes even the bases of cells are removed and a patch of new comb built in, though I think the rule is to rebuild just the cell-walls. This work must necessarily be done a little at a time, and so as to be easily unobserved. There is usually but a comparatively small portion of the comb at any one time free of honey, pollen, or brood, so that it can be operated upon, and often the bees may be too busy at other work to accomplish the job. I have most frequently observed it in the interval between the unqueening and the fertilizing of the young queen, and to the extent of probably 25 to 50 square inches at one time.

Lest you may think I am mistaken in this I will give very strong corroborating evidence. Just one week ago, while at our State convention, our secretary, Mr. Frank Rauchfuss, put the question as to how long a brood-comb is good without renewing. He detailed exactly the experience I had gone through with, saying that he and his brother, who is associated with him in the business, discovered the mouse-like cutting on and about the alighting-board, but found, as I had, that it was just the bees renewing the old heavy brood-combs. I think some writer has previously referred to this, though I can not now recall certainly the matter.

Since, then, bees do renew combs, is it not probable that these very old combs we so frequently read about are not nearly so old as thought to be? I am now firmly convinced that the bees will renew any comb that becomes too much reduced because of the cocoons. In the comb I have just been dissecting, the cells seemed to be lined with from five to ten cocoons, approximately. I examined both dry comb and cooked, and thoroughly water-soaked comb, and in both cases I could peel off the cocoons till I came to the original wall. Five months' breeding in a comb would mean 20 weeks—time for six broods to have hatched in it, leaving six cocoons. Multiply this by 20 years, and you can see at once that at a very conservative estimate there would accumulate at least 120 cocoons in at least a part of the cells in a brood-nest center, which means that the diameter of that cell is reduced by 240 thicknesses of cocoon. I know they are very thin, but not so thin as to be invisible to the naked eye, and must very materially reduce the size of a cell if allowed to remain. Here is a job for scientists who possess delicate tools.

SPACING BROOD-COMBS.

It seems that the majority now use 1⅜ as the distance from center to center. I understand that the Root goods go out that way unless otherwise ordered; and if so, that means that a large per cent in use are so spaced, even if no other manufacturers use that distance. If loose hanging frames can be a success, spaced 1⅝, why can not self-spacing frames with true combs be a success, spaced even to 1¼?

I have about 100 chaff hives built for 9 frames spaced 1½, the hive being 13½ wide. Practically, 9 frames in 13½ inches is a trifle less than 1½ spacing, because a trifle more room is needed on the outside of the outer combs, counting from centers, else the spacing at these points would not be the same as between two combs. Instead, however, of using the 9 frames in the 13½ inches, I have culled out crooked combs, and, when not full of honey, have crowded straight ones till I have in either the tenth comb or a dummy. Yes, I have even crowded a number till I have in a dummy, made by nailing common shingles on the outside of an ordinary ⅞-thick frame, in a few instances using two of these thick dummies and eight combs.

These dummies are not less than 1¼ thick, and a bee-space of ¼ or more behind them, leaving 12 inches for 9 frames, just 1⅓-inch spacing. Some of the dummies are even thicker than 1¼, and sometimes crowded in, leaving quite a space behind them. By actual measurement by rule I found many frames spaced not a bit over 1¼ inches. For several seasons I have in this way used many of these hives spaced anywhere from less than 1¼ to 1½. I spaced so closely for two or more reasons. The frames are old-style ⅜x⅞ bars, cut from ordinary lumber. So long as the combs were built in the center, and true, and had brood only in them, they worked all right. A brood-comb, when sealed, is from ⅞ to a plump inch in thickness; so, when occupied by brood, the comb was fully as thick as the top-bar was wide.

Now, whenever honey was stored in these combs the cells were lengthened until comb-faces were usually not over ¼ inch apart, thus making the *average* thickness of the combs of *sealed honey* 1¼ inch thick, projecting ⅛ past the top-bar on either side. If, however, a comb filled with honey joined one with brood, the honey-cells would be still more lengthened, until, with the 1½ spacing, the comb containing honey would be 1½ inches thick, making the honey-cells stand out flush from the top-bar, $\frac{5}{16}$, wavy combs showing even greater protruding in some cases. The direct result of these combs being thicker than the top-bars are wide is the building up past, over, and all around the tops, fastening all solid to sections, honey-boards, cover-boards, or whatever was above. Like work was also done around end-bars to hive-ends.

The matter stood just this way: I must endure the *awful*, *awful* burr-combs; make an entire change of frames, or else close space till I could afford a change, and I chose the close spacing. Those who use a loose frame know that the bottom spacing is very uncertain. A very few cases occurred in which two combs, because of crooked combs, or swinging toward each other, came so close that the cells on one had to be reduced to less than brood depth in order to allow of brood in the other, which shows the limit of close spacing, and the disadvantages of crooked combs and loose frames.

I said the thickness of a sealed comb of brood (I speak of worker, drone-brood comb is thicker) is $\frac{7}{8}$ to 1 inch. New comb is about $\frac{7}{8}$, while old comb may reach the one-inch mark. I therefore reason that the width of top-bars should be one inch. The spaces between comb faces, when filled with honey, and sealed, may be said to be $\frac{1}{4}$ inch. They will frequently seal at $\frac{3}{8}$ if the honey-supply is short and comb plentiful; but when comb is built just as needed, and also, frequently, even when there is a surplus of ready-built comb, the capped faces of store comb are but $\frac{1}{4}$ inch and less apart.

Suppose, then, brood-frames are spaced $1\frac{3}{8}$, the combs, when filled with honey, and sealed at $\frac{1}{4}$ inch apart, would be $1\frac{1}{8}$ thick. Since it frequently happens that a honey surface has for its neighbor a brood surface, the honey-cells may exceed somewhat the $1\frac{1}{8}$ mark. In order, therefore, to avoid the building of the comb thicker than the top-bars, and therefore up past them into burr-combs, the top-bar should be in width the thickness of the thickest comb. Since, for other reasons, it seems best to have the top-bars no wider than the thickness of a brood-comb, it seems to me that even closer spacing than $1\frac{3}{8}$ would be advisable. A $1\frac{1}{4}$ spacing would allow of a plump $\frac{1}{4}$ inch between worker-brood faces, with perfectly true wired combs, and thus, no matter whether filled with brood or honey, the combs would at all times remain at the same thickness, hence at all times perfectly interchangeable, even with self-spacing frames, whether Hoffman or other style.

After much thinking, figuring, and experimenting, I have decided to adopt an inch top-bar, and not exceed $1\frac{4}{12}$ spacing. I know that $1\frac{1}{4}$ spacing works, for I have tried it; and, if I remember rightly, Mr. J. E. Pond has advocated it for several years.

Loveland, Col.

[Cheshire has a good deal to say on the subject of cocoons in worker comb, and how the bases of the cells are filled up in time with deposits. While they are made up of the cast-off skins, there is also quite a thickening resulting from excreta of the larvæ. So far your observation quite agrees with what Cheshire has to say on the subject.

That bees may entirely renew old brood-combs every few years is a rather new idea, and yet it must be quite within the range of probability. One of two things must be true: Either bees actually carry out all the cocoons and the deposits in the bases resulting from a series of broodings, or else they tear down the whole business little by little and renew it.

With regard to the spacing of frames, along about 1890 I went over this question very thoroughly. At that time we were considering the advisability of making and putting on the market spaced frames. Some used the $1\frac{1}{2}$-inch center-to-center distance; but more used the $1\frac{3}{8}$, because by it they secured less of drone comb and more of worker; and that, moreover, the face of the honey was more even in capping, and the honey itself better ripened. Quite a number also at that time went so far as to argue that $1\frac{1}{4}$-inch spacing was better still, because it would exclude all drone comb; that nothing but worker brood could be reared. It was also urged that it did away to a great extent with the nuisance of burr and brace combs. Prominent among those who held to this idea was H. R. Boardman, of East Townsend, Ohio. He could largely dispense with burr-combs, and still use his old $\frac{7}{8}$-inch-wide top-bars.

I must acknowledge that at the time my preferences were for the very narrow spacing; but it seemed better to make our top-bars $1\frac{1}{16}$ wide, and use $1\frac{3}{8}$, on the ground that it was a golden mean; that $1\frac{1}{4}$ spacing would be too radical for many who would prefer $1\frac{1}{2}$, but who would consent to take $1\frac{3}{8}$ because they could not get any thing else. It is the old question that the supply-dealer has to sometimes straddle the fence, and adopt, not what he really thinks the best, and which will not sell, but a compromise that *will* sell.—ED.]

GENERAL CORRESPONDENCE

NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

Mr. David Coggshall; Mr. Harry S. Howe, the Lightning Operator and Champion Hill-climber on the Bicycle.

BY E. R. ROOT.

After GLEANINGS for March 1 had reached the Coggshalls I received the following note from Mr. Harry S. Howe, one of their "lightning operators." As it may possibly explain why Mr. Coggshall's bees stung so like fury the day I was there, I will give it right here:

> *Friend Root:*—We were all much interested in your report of the trip to the Varna yard. Of course, the bees were cross; and, besides, I think the boys stirred them up some for your special benefit. About the time the last copy of GLEANINGS got in circulation,

the help Mr. C. expected for the summer began to telegraph that they had "backed out." The reason those bees could not sting the boys on the hands was because they could not get hold of any thing to hold themselves down By shaving or singeing all the hair from the backs of our hands, we fix it so they only slip up when they try to sting.

West Groton, N. Y., March 6. HARRY S. HOWE.

Several times I had a sort of feeling that the bees were "hared up" for my particular benefit; but I was afterward told by neighbors and local bee-keepers that Mr. Coggshall was in the habit of working the bees in this way, whether it was during the robbing season or during the honey-flow. His motto seemed to be, the greatest amount of honey with the least expenditure of labor, the matter of stings being of only secondary consideration.

Speaking of stings reminds me of bee-suits. The accompanying illustration shows Mr. David Coggshall, a brother of W. L., rigged out in his bee-proof sting-proof suit. The majority of bee-keepers seem to think that gloves are unnecessary; but let me say that, if they worked on the Coggshall plan, they would find gloves almost indispensable. Notwithstanding, one of the men worked the bees barehanded; but, my! oh my! I would not have done it for all the bees in the yard.

Mr. David Coggshall (of whose face the reader will get a dim outline behind the veil), like his brother, is not only a prosperous farmer, living in a fine country residence (about a quarter of a mile from his brother's), but also also an extensive bee-keeper. He operates some 600 or 700 colonies in perhaps six or seven apiaries. I did not have time to look over any of his yards; and in any event, I assumed that he worked his bees much as did his brother —on the lightning - kick - snap-bang-get-there plan. His sting-proof bee-suit is certainly suggestive of that assumption.

Mr. Coggshall has had different men and boys work for him in his apiaries; but he considers Mr. Howe, the young man to whom I have referred several times, as being his fastest lightning operator. Harry, at the time of my visit to the Coggshalls', was in the bicycle business at Ithaca, N. Y. He taught school in winter, repaired and made bicycles, and ran one or two apiaries of his own in the vicinity of Cornell University. I have before said that he was a bicycle enthusiast, and, of course, he and I found companionship mutually agreeable. When we were tired of talking about bees we would talk about "bikes."

At the time I arrived in Ithaca, I had taken a forty-mile ride from Romulus, N. Y., over the hills to Ithaca, better known as the home of Cornell University. I had trundled over the hills until my legs were tired—yes, weak-kneed, knock kneed, and every other kind of tired. Arriving at Ithaca I sought the nearest depot, and was there informed that I would have to go to the *other* depot, upon the hill. I followed in the direction pointed out, supposing that, of course, I could reach it in a short time. I started to ride up the hill; but passers-by began to call out, "Hey, there! going to climb that hill? Better get off 'n' walk—you'll live longer, stranger;" and—*I did!*

I kept on going up, up, up, until it seemed as if I could not even *push* my wheel, even on foot. I hurried so as to catch the train that was to come soon at the other station; but after half an hour's hard toil I arrived in sight of the station, more dead than alive, just as the train was pulling out. I then fell to wondering why York State had so many mean hills, and whether *any* mortal had *ever* climbed *that hill* on a bicycle, for it is indeed a series of hills, one on top of the other. To my great astonishment I learned that there was at least one who had done it, and that was my friend Harry Howe, who had performed the feat, not once, but several times, on a bicycle *of his own make.*

The accompanying illustration shows Harry, and the wheel that made that remarkable climb. My camera tried to catch him on the wing; but it was only a streak on the film. The only shot I can present to you is the one

HARRY S. HOWE, OF ITHACA, N. Y.

that the same camera took some months later, when the weather had turned considerably colder.

I should like to tell you, if I could, some of the remarkable records Harry has made in extracting honey; but, as I have said of the records in general, made at Mr. Coggshall's apiaries, I have forgotten just what they were; and, even if I could tell you, you might think I was telling you a "fish story." However, if Mr. Coggshall will submit the series of records made by himself, Harry, and some of his other men, I should be glad to publish them.

* * *

DEAD BEES ON CELLAR BOTTOM.

A Worked-out Proposition; Some Interesting Data on Indoor Wintering; Temperature of Cellar and Temperature of Cluster, etc.

BY C. C. MILLER.

You never spoke truer words, Mr. Editor, than when, on page 141, you said it is hard to tell how many bees should be swept from cellar bottom where bees are kept. You said 75 colonies might give only a pint a month, and they might give a bushel. You might have added that the pint a month might be with the better wintering, or it might be that the bees were wintering better with the bushel. For bees may be dying off rapidly in a hive, and none of them come out of the hive. Probably it's better to have them on the cellar bottom than on the floor of the hive.

There's a difference in colonies. I've just been down cellar; and while I find the floor of most hives comparatively clean, a few of them have mounds of dead bees, in two or three cases the mound rising two inches high and touching the bottom-bars. In one case the entrance was filled with bees almost entirely, the upper half of the entrance, which is two inches deep, being filled with live bees and the lower half dead. The live and the dead bees form one continuous mass. This is a very unusual case, for generally no dead bees are suffered near the cluster.

Nov. 17, 1896, I cellared 260 colonies. After 110 days I swept what I roughly estimated at 48 quarts of dead bees; 23 days later, about 22 quarts. That makes, during the first 110 days, about 29.3 cubic inches per day; during the later 23 days, 64.3 cubic inches per day.

Nov. 23, 1897, I cellared 295 colonies. After 70 days I swept out 23 qts., carefully measured; 29 days later, 35 qts.; 22 cubic inches per day in the first part, 81 cubic inches per day in the last part.

A much more marked difference would probably be shown if the first ten days of the winter should be compared with the last ten days. Likely ten times as many dead bees would be swept out the last ten days as in the first ten days.

TEMPERATURE OF BEES IN WINTER.

Not long ago I said something about the temperature of the brood-nest in winter, giving a possible explanation for the fact that outdoor colonies begin to breed in February, and cellared bees not till set out in April. Hasty, commenting upon it in *Review*, thinks my explanation is perhaps "nearer to being a well-reasoned-at proposition than a mere chance shot." Having gathered what data I can from different sources I'd like to make it, instead of a "well-reasoned-*at*," at least a tolerably well-reasoned *out* proposition.

The bee is warm-blooded. Seven bees taken from a colony in cellar showed a temperature of 81.5°. Some bees inclosed in a glass, warmed to 104°, were all dead except one at the end of 90 minutes, the temperature of the surviving bee being raised to 95°. Some bees that were torpid in a temperature of 47.7°, but brought to life in an atmosphere of 59°, showed an interior heat of 77°. Results obtained by M. Cisielsky were somewhat different, as he obtained 95° as the normal temperature in the body of a bee.

The effort of the bees seems to be to keep the temperature of the cluster from going below 50 to 53° at any time. Notice that the temperature of the cluster is a separate affair from the temperature of the individual bee, just as the temperature of the atmosphere of a crowded room is not the same thing as the temperature of the human bodies in the room. Should the temperature of the cluster, that is, of the air immediately surrounding each individual bee, fall a little way below 50° for a short time, torpor ensues, leading to death if the temperature be continued. But the temperature of the body of a bee can not be allowed to sink to 50°. Torpor and death will come with a temperature less or more continued at 75°.

How is it that, in a temperature of 50°, the individual bee keeps up a temperature of 85 or 95°? Just the same as a man in a zero temperature keeps his blood something like a hundred degrees higher by means of the fuel burned up in his body. The man may help the matter, too, by kicking his heels and flinging his arms. So can the bee. Now, suppose the heat of the cluster is found to be falling below 50°. What's to be done? Why, there's a stir in the camp; possibly the outside bees, feeling the cold, break for the middle of the cluster; the stir and exercise increase the temperature, increased consumption keeping pace with it. Only a little of this stir will be needed if the temperature is only a little below 50°, increasing as the temperature sinks, making it necessary to have the center of the cluster a good deal above the 50° at which the outer part of the cluster must be kept.

The colder the winds blow about our dwellings, the better we keep the fires in our stoves. So it is in the bees' dwellings. In order to have the outer part of the cluster keep up to 50° when the zero air about it is cooling it off every minute, the fires must be boomed in the center of the cluster. So when it gets cold enough outside the cluster, the center will run up to 86° or more, making it warm enough for the queen to commence laying, as she is likely to do in February if colonies are wintered out. Then when breeding has commenced, the proper temperature must be kept up continuously, more fuel must be used, the ashes accumulate in the shape of bowel contents, tending toward diarrhea and destruction.

So you see that we are specially to strive to keep the center of the cluster cool by keeping warm the air surrounding the cluster. Packing, protection against cold winds, and that sort of thing, are plainly indicated when bees are wintered out. In the cellar it has been generally considered, on grounds deduced from actual practice and observation, that the air outside the cluster should be 45°. If much above this point, activity commences, the heat of the cluster is increased, and increased heat and activity point toward the same result as before. Disturbance of the colony by jarring, or in any way, whether in or out doors, makes the tendency greater toward increased heat in cluster.

Now comes a practical question: We have for a long time been accustomed to think and speak of 45° as being the proper temperature of a cellar to keep the bees as nearly dormant as possible. But the bees seem to have settled upon 50° as the proper temperature of the cluster at which they will be most nearly dormant. How about that difference of 5°? Why not keep the cellar at 50°, and save the bees the trouble of doing any thing to raise the temperature? Suppose we try it. Fix the air of the cellar at 50°. Now, the outside of the cluster is warm enough without stirring up the chunks in the center. But it must be remembered that, in each bee, there is a temperature of more than 80°, a temperature necessary for the continuance of life. You can not stop the tendency to equalization of temperature between the bodies of the bees and the air in the cluster, so when there's nothing lower than 50° outside the cluster, the heat from the bodies of the bees will run the heat of the cluster above 50°. Get the idea? So long as the fires are kept up inside, the air outside must be somewhat below the temperature desired for the air in the cluster, so 45° outside is needed to keep the cluster as low as 50°.

I wouldn't like to vouch for the exactness of the figures I've used, but I believe the general principles are so in accordance with the truth that my esteemed friend E. E. Hasty may label it a "worked-*out* proposition."

Marengo, Ill.

[The doctor, instead of saying, "I don't know," has told us a number of interesting things he *does* know. Nine times out of ten, when he says "don't know" he does "know" I *know* he knows. Throw away your modesty of statement, doctor, "don't know," and give us hard facts like the above. I've almost a notion to put them (the facts) in permanent form in the A B C of Bee Culture.—Ed.]

WORK AMONG THE BEES.

The Big Wages of Another Bee-keeper.

BY E. S. ARWINE.

Mr. Editor:—As you seem puzzled, and continue to prod Dr. Miller about that honey crop, I thought I might shed a little light on the subject. The first two years of my residence in California I had charge of the apiary of W. S. Hathaway & Co., in San Bernardino Co., run exclusively for comb honey. The first year, 1888, I took 16,240 lbs. in 2-lb. sections, from 184 swarms, spring count. I commenced work March 16, and closed Aug. 6. During that time I built a dam across a little creek, cut a ditch, with pick and shovel, about half a mile long, to carry 16 miner's inches of water. I broke the ground, and planted about 2½ acres of alfalfa, and kept it irrigated until July 15. This work occupied 20 days, leaving me 104 days in the apiary. I did not work Sundays, as I am a Christian, and keep the Lord's day. To this must be added help from my children, equivalent to 40 days' work for myself, making a total of 144 days. During this time I added the super to 140 hives (the others had supers left on from the previous season); removed them at the close of the harvest, and left every thing in ship-shape condition for winter. That season I took 16,240 lbs., or an average of $87\frac{29}{92}$ lbs. per colony, spring count. We nailed all the sections except about 250 or 300, left over from former season, and all the shipping-crates, and made a few supers, about 15 in all. My heaviest days' work that year was removing 896 lbs. and replacing it with a like number of empty sections.

In 1889 I reached the apiary March 20, and closed the season Aug. 12. Excluding Sunday, which I did not work, gave me 124 days; to this must be added 50 days' work by my 12-year-old boy, equal to, say, 35 days for myself, making a total of 159 days. But six of these days I was out of the apiary, leaving net work 153 days, averaging 9½ hours. I took that year, 1889, in all, 16,766 lbs. I had five colonies this year, with 1-lb. sections; the rest were 2-lb. sections. My heaviest day's work that year was removing 928 lbs., and putting on a like number of empty sections. The greatest yield of one colony was 192 lbs., comb, and smallest 56; average of the five swarms in 1-lb. sections, 92 lbs. The largest yield of one colony in 2-lb. sections was also 192 lbs.; smallest, 32; average 91 lbs. per colony, spring count, of 186 swarms. I had no bee-escapes, and the supers were all tall enough to hold two tiers of 2-lb. sections, except about a dozen which I made for single tiers. I also made by hand 5 hives and supers for 1-lb. sections. We nailed all these sections except the 460 1-lb. ones. I would rather fold 1500 1-lb. sections than nail 500 2-lbs., like those we used, as the following description of motions will show:

1. Pick up with left hand; 2. Grasp the other end with right hand; 3. Both hands bring ends together; 4. Press dovetails into position; 5. Place the section on the table. To nail sections requires four motions with left hand to pick up the four pieces; six motions to pick up six nails; six motions to place them in position; twelve taps with right hand to drive the six nails—one to start each nail, and one to drive it; one motion to take the section out of the nailing-frame, and one to place on the table, and one motion to turn the section over

to nail on both sides, making 31 movements, for nailing, against five for the one-piece; or, if we count the simultaneous motions of both hands as at three and four, it will be 7 to 31.

Friend Ernest, if I were a sporting fellow I would wager a pink bean against a black-eyed pea that I could take any bee-yard that will not carry over 200 colonies without overstocking, and do all the work necessary—that is, put all the sections together, put in all foundation, put the sections on the hives, and remove the same to the amount of 100 1-lb. sections to each hive, clean all the sections, nail all the shipping-cases, grade and put the honey in the cases, marking the grade on each case, my supplies being all on hand when the weather is warm enough in the spring for soft maple to begin to bloom, and have all done up in good order, and the bees ready for winter by Nov. 15. I would as lief do the work where the average is 90 to 100 lbs. per colony as where it would be only 25 or 30, provided the bees were as long in gathering the small amount as they would be to secure the larger one. With the larger yield, propolis would be at a minimum, and at the maximum with smaller. With the bountiful yield I could remove full supers; with the smaller I should have to remove one or two to a dozen or so from a hive to prevent travel-stains, and I have no doubt the exhalations from the cluster will in time stain the combs perceptibly.

In the larger yield, my compensation, or that of my employer, would be much greater as the case might be. If I work for a man I want him to get more out of my labor than barely enough to compensate me for doing it. The greater his profit, the more is my rejoicing.

Dove, Cal., Dec. 10.

[If I figure correctly your bees in 1889 (allowing 10c per lb. for comb honey) paid you over $18.00 per day for every day given to them. In 1888 they returned you something like $15.00 per day. But—ten years ago you probably realized a much higher price than 10 cts.—just how much I can not say. But the results beat Dr. Miller by considerable. His rate was 500 per day. We thought his record was big and the wages too. Nailed sections—I don't see how any one can afford to fuss with them.—ED.]

* * *

THE PETTIT DIVIDER.

Its Form of Construction; Size and Shape of Brood-nest.

BY S. T. PETTIT.

Mr. E. R. Root:—The dividers I sent you some time ago are not "exactly as I recommend them for 1898." The changes I purpose making from those of 1897 are these: First, the holes will be ⅜ instead of $\frac{5}{16}$; second, all the ¼-inch slats except the two end ones will be superseded by slats one inch long, nailed at the edges of the divider; and, third, the thickness will be ⅛ inch instead of ⅙ inch, because the bees seem satisfied with that thickness, and do not gnaw them as they sometimes do separators.

I have felt all along that it would be better if the slats were out of the way, so the bees could cluster together and have free passage from end to end and from section to section outside the divider, and, doubtless, practically as well as theoretically, the change will be an improvement; and, further, the inch slats will keep the divider rigidly in place. Suitable nails with ¼-inch heads would be, perhaps, more convenient and more desirable.

Of course, the notches in the bottom side will not be necessary except when T tins are used. I will add that bees do not care very much, if, indeed, they care at all, to build their stores and brood nest in spherical form, as some have supposed. They build in that form because the conditions are favorable for so building, and not from instinct or choice.

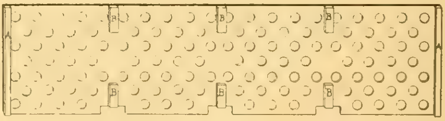
The bees cluster in that form, and, consequently, the necessary even animal heat is there in that form, and so the work of comb-building proceeds downward and outward, and thus the spherical form is in a measure preserved. Change the form of the cluster, and the animal heat and comb-building in the new form will proceed just as rapidly as in spherical form. Following up these thoughts will help us to understand that a proper distribution of the bees by means of a properly constructed bottom-board, and its relations to the hive, and the large ventilation thus provided for is fully half the battle in the new system.

Make the bees snug and warm at the sides and corners of the supers; encourage plenty of bees, by the help of the divider, to stay there, and then as the bees, the heat, and the honey are lavishly supplied there, the conditions for good work are present, and it will be done there, regardless of shapes or forms.

I cover my supers with cushions, and the bees do not on cool nights shrink from corners and sides. S. T. PETTIT.

Belmont, Ont., Can.

[As there has been considerable inquiry in regard to the Pettit divider, I asked friend P. to send me the latest form, or the one he would recommend. He did so, and I had an engraving made. It will be noticed that it is specially adapted for use in T supers, although it may be used in any form.



This same divider bee-spaced on both sides with cleats, A A, B B B, etc., would give excellent results when used with plain sections; in other words it might then be called the Pettit fence; but friend P. is not in favor of plain sections. In the last *Canadian Bee Journal* he calls them a "silly fad," and says that "the talk about less peep-holes and better-finished sections is all nonsense," and that bee-keepers are "losing their heads." Suppose, friend P., I were to say the same thing of your statement, to the effect that sections next to your divider were better filled out was "all nonsense." The fact of the matter is, I believe there is something in your divider; and I also believe that, before the season goes by, if your prejudice does not run away with your ordinarily good judgment, you will be convinced that the plain section is not a "silly fad" any more than your divider. Why should it be? The fence as we now make it, and your divider, utilize one of the same principles—free communication in every direction.

I suppose friend Pettit bases his statement in the *Canadian Bee Journal* on his experience with a fence similar to what we use. A sample of this fence was sent us, but it was markedly defective in four important particulars; viz., width of slats (too narrow), space between slats (too wide), thickness of cleats (too thick and too narrow), and poor workmanship.

With regard to the size and shape of the brood-chamber, and the importance of having it kept warm, I agree with you exactly.—ED.]

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SPECIFIC GRAVITY.

What should be the Minimum Weight per Gallon that should be Allowed to go on the Market? Extracting before all the Honey is Sealed.

BY O. O. POPPLETON.

On page 126 Mr. Dan White tells of a man getting a larger yield of honey from about 90 colonies than almost any other person could have done, by extracting each hive every day. In the footnotes to the same article you suggest the adoption of a rule that no honey should be sold that weighs less than 11 lbs. per gallon. These two extracts open up a subject that I have wanted to say something about for years, ever since my Cuban bee-keeping experience.

It is generally supposed and conceded by bee-keepers that a much larger yield of honey can be obtained by extracting before honey is sealed, than by waiting until a part or all is sealed. Is this idea correct? I think not.

The main honey-bearing flora in Cuba, a species of morningglory, has some peculiar habits of flowering that enable one to make observations that are difficult to make in this country. Its flowers last one day only, a new set of bloom coming out each successive day. The amount of bloom varies each day, but rarely if ever two days alike. I have seen the hedges, stone fences, etc., look almost like snowbanks one day with the profusion of bloom; the next day I have had to walk rods to find a single flower; the next day, a half or a quarter the maximum number would be out, and so on through the entire blooming season. We had over 400 colonies in one apiary, enough to gather all the honey in the field; and I could tell each morning, by noting the amount of bloom out that day, almost exactly the amount of honey that would be gathered during the day, as shown by the hive on scales. I weighed the hive each evening after bees were all in from the field, again in the morning before they had started out to work, the difference in the night and morning weights showing the amount of shrinkage of the newly gathered honey. A study of the record of these weights, made after the close of the honey season, showed two facts—one, that the shrinkage from first-gathered to well-ripened honey was about one-fourth; the other was that this shrinkage almost all took place during the first night, only about a tenth of the total shrinkage occuring after the first night. The peculiar honey-flow, and our having enough bees to gather all the honey in the flowers, brought out the above facts much more clearly and positively than I have ever been able to observe them here in the States.

To enable that man Mr. White speaks of to gain very much in quantity would require that he extract his entire 90 colonies *late* each day, after the bulk of that day's yield had been gathered; and even then, if the extracting were done while the bees were still at work, in my opinion the loss caused by disturbing the bees would almost or quite equal the gain.

Cuban honey has about the same body as has our white-clover honey; but honey from basswood is usually much thinner when first gathered, and loses more in ripening.

Another thing I noticed was that the amount of honey in the hive had no influence on the amount of honey the bees would gather, other conditions being alike. It made no difference in the amount of honey gathered by the bees, whether there was 5 or 50 lbs. of honey in the hive, so there was plenty of storing-room yet in the hive.

The note of warning given by Mr. White against our taking out unripe honey is one that can not be sounded too often nor too long, and I hope that what I have written will help to do away with the mistaken idea that a larger quantity of honey can be had by taking it out while yet in an unripe condition.

Three or four years ago a Canadian writer, I don't remember who, wrote an article on the "Weight of Extracted Honey." Two of his statements caught my attention. One was that "Cuban honey weighed 10½ lbs. to the gallon," the other was that "good honey should weigh about 13½ lbs. to the gallon." I don't believe that any one ever saw any thing that could possibly be called honey that weighed as little as 10½ lbs. per gallon; nor, on the other hand, do I think any honey weighs as much as 13½ lbs. This is only my opinion. I have never had the facilities to weigh accurately any samples—that is, with scientific accuracy. One lot of over 3000 gallons of Cuban honey we sent to this country, weighed 11 lbs. 14 oz. to the gallon; and my experience in handling honey makes me think that is about the average weight of a good article of honey. I doubt whether any good honey ever varies more than half a pound either way from that figure.

Assuming that an article of well-ripened honey weighs 12 lbs. to the gallon, which I think is about correct, and water 8 lbs., it will be seen that honey weighing 10½ lbs. will need be nearly one-half water; and honey weighing 11 lbs., the limit suggested by the editor, will be ¾ honey and ¼ water. This is, I think, entirely inadmissible, and I would suggest 11½ lbs. to the gallon as the lowest limit of merchantable honey.

I wish, Mr. Editor, that you would, some time or other, cause accurate weights to be taken of different grades of honey, so we can have facts, not opinions, to base any future arguments on.

Stuart, Fla.

[I suggested 11 lbs. as the lowest limit, because the great majority of all honeys runs about that weight to the gallon. I do not know whether this average is because beekeepers have a habit or a general rule of extracting before *all* the honey is capped, or because the honey would not run any heavier than that if it were all capped over. I am afraid if we put 11½ as the lowest limit it would throw out two thirds of the honey. We have weighed honey, and found on the average that one of good heavy body will run about 12 lbs. to the gallon; and in our experience the difference between medium honey and thick is the difference between 11 and 12 pounds. That which I have "over at the house," and which is so thick it is almost like chewing wax, runs nearly 13 lbs. to the gallon. If it were thicker than this, it would be more like syrup boiled down, or what is commonly termed "wax."

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QUEENS IN POPULOUS COLONIES.

A Simple and Reliable Method for Finding them without Wasting Time in Pulling over the Combs.

BY F. GREINER.

To find the queens in very populous colonies of black bees is not always an easy task; and, as the editor says, it is well to have two pairs of good eyes to do it. Hybrid queens are, generally speaking, not much easier to find, except as their color makes them more conspicuous.

I have never yet made it a point to breed up to pure stock; in fact, black blood predominates at present in my yard; consequently I have had some experience in hunting out black queens. If I do not *have* to have a certain queen that minute or hour, my mode of operation is this:

Some time in the forenoon I remove a comb from the side of the brood-chamber containing the queen that is to be captured, and insert instead a nice comb with a considerable amount of drone comb; close the hive, and leave it entirely alone for 24 hours, or perhaps 36, depending somewhat on the condition of the comb given. The bees, very eager to raise drones, and not having any other drone comb of any amount in their hive, go to work at once, fitting and preparing the cells in the inserted comb for the reception of eggs; and when, on the next day, the hive is very carefully opened (with as little smoking as possible), and this comb quickly taken out, our sought-for queen will generally be found on it. If I do not find her the first time, I return the comb and close the hive, wait ten or twelve hours, and make a second search—yes, perhaps a third one. By the amount of work done on the comb after the lapse of the first 24 hours, whether it is all cleaned up — whether any, many, or no eggs have been deposited in it, the experienced apiarist can judge with a degree of certainty how soon he may expect the queen to begin or to continue her work on said comb, and he can make his calculations accordingly.

This tactics seldom fails to gain the desired point. Nine times out of ten the queen is found by the time the hive is opened the second time after the insertion of the drone comb; and the time actually required to do the whole work need not exceed ten minutes. My last resort is the entrance-guard plan as the editor explains on page 850.

Naples, N. Y., Jan. 4.

[I believe your plan, friend Greiner, will work tiptop. In the busy rush of work in the apiary I always dread hunting for queens in strong colonies. Sometimes I may find Her Majesty on the first comb; but more than likely she will be on the last one. If I can not find her the first time going though the hive, I shut it up and clamp a guard over the entrance, and then say to the bees, "Swarm if you want to, but you can not take your queen." The only reason why I care to find a queen in the midst of the honey-flow is to clip her wings. Of course, some may say queens ought to be hunted up and clipped in early spring, when they are not very populous; but nearly every season we buy strong colonies along at the approach of the honey-flow, and of course there are only two plans open to us—find the queen and clip her wings, or put entrance-guards in front of the entrance. I prefer clipping when I can do it without too much work.—Ed.]

MAPLE SYRUP MADE OF SUGAR AND "HONEY."

Since you don't seem to fancy the corncob recipe for making maple syrup I will give you mine "free gratis." Place one cup granulated sugar in a sauce-pan; add about half a cup of water (less if to be thick); let boil a few minutes, then add two cups best white-clover honey, remove from the fire, and flavor with a scant teaspoonful of vanilla.

Every one pronounces this "splendid," and it is an agreeable change for breakfast cakes when one has become tired of honey.

We discovered this recipe while making Dr. Miller's caramels, the flavor of which reminded us as being much like the maple wax we used to make years ago when making maple syrup. F. W. Stevens.

Moore's Hill, Ind.

[All right, friend S.; give us the white-clover honey for flavoring, instead of the corncob juice, by all means; and it has been many times suggested that such a mixture is milder and pleasanter than pure honey; but let the mixing be done *at home*.—A. I. R.]

MONEY IN BEES.

How to Find it; How the Disagreeable Feature of Peddling may be Overcome; Getting Prospective Customers to Taste; the Secret of Making Sales.

BY H. D. BURRELL.

How to dispose of the honey crop profitably is becoming a serious problem with most bee-keepers. Not many years ago it was easy to raise comb honey and ship it to some commission house in a near by city, and realize 16 to 20 cents a pound for it. Now in many places most of the honey-producing timber is gone, and waste lands reclaimed and cultivated. These causes, with frequent poor seasons, render the honey crop uncertain; and, worst of all, comb honey in the cities is quoted 7 to 12 cents.

Formerly I raised comb honey almost exclusively, and shipped nearly all of it to commission houses. But some years ago I unexpectedly had about a ton of autumn extracted honey to dispose of. Shipped to a commission house it would probably have netted 4 to 5 cents a pound, *some time*. I had never tried peddling honey, and was very much prejudiced against peddlers and peddling; but I wanted more for that honey. I loaded some of it into the wagon, put up in convenient packages for retailing, and started, though with much trepidation. I knew a few rebuffs would send that honey to the city for what it would bring. But I sold honey at nearly every house, over 300 lbs. the first day, and decided that peddling (honey at least) was not such bad business after all. Many neighbors and acquaintances who had passed by frequently for years and seen the sign, "Honey for Sale," but never bought a pound of my honey, bought freely when it was carried to them. And they didn't buy afterward, either, unless I carried it to them and asked them to buy.

The ton of honey was soon sold at 8 to 11 cents per pound, according to quantity wanted, and several thousand pounds more were bought and sold at a fair profit. Since that time I have raised mostly extracted honey, always retail it myself, and am getting the same prices now in these times of very low prices that I did ten years ago. Honey, if a good article, will sell itself almost anywhere, if given a fair chance. I have never found a place, in country or town, where it would not sell fairly well, any time of year, though in the fall is the best time to sell, in my experience, after the bulk of fruit is gone, and the many needs of the winter season have not yet taxed the pocket-book.

But I think I hear some one say, "I can't peddle;" or, "I won't stoop to peddling!" Now, neighbor, stop a minute, and listen. When I was young and green I tried "canvassing" for a book. For years after, I had a horror of peddling. When I came to keep bees, and have honey to sell, I would not even ask a merchant with whom I traded regularly to buy my honey. If any one but a commission man wanted any of it, he had to ask for it. I am not a natural salesman, a poor talker—timid, diffident, and easily rebuffed. I can, however, sell an average of 100 pounds of honey a day in any fairly good farming country, and in villages and towns often much more. You will find selling your own honey different from selling books or notions. People will be glad to see you come. You need not lose one atom of your dignity, if it is of the self-respecting kind. If any one thinks any less of you for selling honey, provided you are polite and respectful, it will be some one whose opinion is not worth minding. Any one with a little tact and energy can dispose of 3000 to 5000 lbs. of good extracted honey at fair prices, at odd times in fall and winter, when time is not worth much, and much more can be sold by devoting more time to it.

Comb honey is not satisfactorily retailed, in my experience. It too easily gets to leaking, and is then mussy, and not attractive. Sell comb honey only by the case if at all. Perhaps I may be pardoned for saying, in such an article as this, that I have for many years kept from 50 to 195 colonies of bees, and have raised and sold over 60,000 pounds of honey, and bought and sold much besides. I write facts learned in the dear but thorough school of experience, and not plausible theories.

First, secure a good article of well-ripened extracted honey, and so care for it that it will remain good. My ways of doing this differ from the usual ones; but I will not take time now to explain. Perhaps in some future article I may do so if the editor wishes it.

When we are ready to sell, if the weather is mild attach a sliding faucet to a five-gallon screw-cap tin can of honey; place the can on the wagon-seat, the dish to be filled on platform scales underneath, and weigh out any quantity wanted. It is usually most satisfactory at this time of year to let the purchaser furnish the dish, then there is no package to pay for or return.

Some writers have advocated selling not less than one dollar's worth when selling honey direct to consumers. I can't agree with them. A small sale often paves the way to a large one later, and it always pays to be accommodating and obliging; but I charge 1 cent per lb. more for less than a dollar's worth.

In cold weather, when honey will not run readily, I put up honey in 1, 2, and 4 quart tin pails, and charge extra for the pails. Always, to every package sold, attach a neatly printed label, giving your name and address, and plain, simple directions for so caring for the honey that it may retain its good qualities until used. Dress neatly but plainly, like a farmer, not like a city man. Have every thing neat, clean, and attractive.

Now we are ready, how shall we find buyers? Fill a small new tin pail with honey, and label it Call at every house—skip none. You will often make sales where you least expect it. When the door is opened, say, "I have some choice honey, please get a spoon and sample it." Right here is the main point. Get every one, if possible, to taste your honey. Most people have sweet teeth, and a taste of good honey puts them in good humor. Be very sure that the children, if present, have a taste too. If you don't know already that parents' hearts are very easily reached through their children, you will soon learn it. If a servant or child goes to consult the housekeeper about buying honey, see that the honey-pail and a spoon go too. Twenty-four people out of twenty-five would say "no!" if asked if they wanted to buy extracted honey. If they taste first, many will buy. Many are prejudiced against extracted honey. Perhaps some time they have had a poor article of extracted or strained honey, or, may be, they think the honey is bogus. I have many times had such people taste my honey and say, in a surprised way, "Why, that is good. That is genuine honey. What is the price?"

One lady said to me last fall, "I never buy extracted honey. I buy comb, then I know what I am getting." After she had been induced to sample the honey she found it good, knew it was genuine, bought some, and asked me to call again.

Don't annoy people by urging them to buy when they don't want to, and be invariably polite and pleasant whether they buy or not. You can easily make friends who will be glad to see you come again. Follow the same route every year, and your sales will increase each trip. You can go over the same ground as often as once in six weeks to advantage. I have many customers who at first bought lightly, or not at all, who now buy 20 to 50 pounds of my honey every season. One near-by town of about 2000 population has used over 1500 lbs. of my honey this season up to Feb. 1, and all autumn honey too. I seldom have any other kind in my present location. But there is little buckwheat, and the honey is mostly from goldenrod, fireweed, and Spanish needle. One pleased customer will often find others for you. In this way I have this season sent three 5-gallon cans of honey to customers in Chicago, at 9 cts. per pound net. "Can't buy genuine honey in Chicago!" they say. A little ridiculous, isn't it?

Some one will ask if I have no competition in selling honey. Yes, but that doesn't matter much. There is plenty of room, and customers for all. Make a reputation for square dealing and selling a good article, and customers will wait for you. If some one undersells you, and gets some of your customers, never mind—there is a very large market almost entirely undeveloped.

Think of this matter, brother bee-keepers. Plan to raise a crop of good extracted honey next season, and then get all there is in it. Don't divide with transportation companies or middlemen. A crop of extracted honey is much surer than a crop of comb, and, in most localities, two or three times as great. Ask a fair price for your honey (all you can get is a fair price), and adhere to it. It is much easier to lower prices in a good year than to raise them in a poor one. If there is a large or small crop of grain or fruit, every one knows it. Not so with honey.

Covert, Mich., Feb. 8.

[I wish to place special emphasis on what friend Burrell says regarding getting prospective customers to *taste* the honey, and especially the *children;* he says very truly that parents are easily reached through the children; and if you tell the good mamma, while the child is tasting, and teasing her to buy, that honey is far more wholesome as a sweet than ordinary syrups or sugars, you may be able to clinch a sale right then and there.

Friend Burrell's article will bear careful reading. It not only rehearses some things that we perhaps already know, but tells how to make a success of peddling, without losing one's dignity or self-respect.—Ed.]

* * *

THE WAX-PRESS.

The Economy of its Use Over the Solar Wax-Extractor.

BY J. J. RAPP.

I have been experimenting for a year or so with the various plans for getting the wax out of old combs, and have never been satisfied with the amount secured. Having several hundred old combs to render this year, I fitted up a press with which I have been very successful. The bee-keepers here who annually produce hundreds of pounds are surprised at the amount of wax they have been throwing away. One prominent apiarist estimates his loss at nearly two tons of wax since he has been in the business. Most of them have been in the habit of consigning every thing to the sun extractor, and being satisfied with the results. At first I had no idea of looking any further than to old combs for material to work in the press, taking it for granted that the work of a good sun extractor on cappings, in this land of sunshine, was about as complete as it was possible to make it.

But after trying it I find slumgum to be a rich source of wax, while moth-eaten combs, or any refuse that has been rendered by other methods, may be profitably worked. My first lot consisted of 284 combs, Langstroth frame, most of which had been in use ten years or longer, and were about as unpromising a lot as you are likely to find. Many of them were filled with old pollen, so that they weighed almost a pound apiece after cutting from the frame; or, to be exact, 20 weighed 18 pounds. They yielded 117 pounds of clean wax, or a pound of wax to $2\frac{5}{12}$ frames, or about 6½ lbs. to a sixteen-frame hive, or $7\frac{4}{5}$ to a nineteen-frame. The weight of cheese corresponded with that of the wax, and about 20 lbs. was either soluble or carried off with the water.

I next tried a small quantity of capping slumgum (about 9 lbs.) that had lain in the sun extractor nine months, two of which were during the hottest weather we have here in California. It was as black and hard as coke, and showed about as little sign of containing wax. It yielded 2¼ lbs.

Third lot. Had an oil-case half full of sun-extractor refuse that had stood in the weather a full year, and was moldy, and even apparently rotten in the bottom, and full of moth-cocoons in the middle. It gave 8 lbs. of fair wax, with a moldy smell, and the cheese weighed $18\frac{1}{8}$ lbs.

Fourth lot. Melted the cappings from a ton of honey, in the sun extractor, and got 20½ lbs. of wax. Slumgum showed very little wax; but, by stirring, it might in a day or so have given another pound; worked the refuse in the press, and got 7½ lbs. more; or, the sun extractor took 72 per cent of the wax obtainable. I am satisfied that, with the best construction and management, the sun extractor will not save over 80 per cent of the wax in cappings, even here in California. All of this wax was as bright and clean as it is possible to get it in a small way, and brought 23 cts. per lb. here in Ventura.

Fifth lot. A neighbor had eight colonies that died in the winter or early spring, and left the hives with the combs in them remaining in the apiary until about Sept. 1, when I helped him dispose of them. We took the stuff out — worms, moth-cocoons, and webs, with the little comb remaining on the frames, and rendered it all together, and got 26½ lbs. of clean yellow wax; also four or five of a crumbly wax that I suppose to be myricin. It probably came from the excrement of the worms.

In order to test cappings refuse further, I got 313½ lbs. of a brother bee-keeper who had a large crop of honey this year. This lot yielded 96 lbs. of wax, 91 of cheese, and 126½ was either soluble or passed off with the water. Had I been able to get the amount of wax secured in the sun extractor, this would have been a conclusive test of its effectiveness.

I worked several other lots with similar results, but the above will cover the whole range of wax-producing material.

Ventura, Cal.

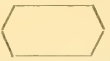
[In the past, the merits of the wax-press have been extolled by various bee-keepers; and I am aware, also, that excellent showings have been made — almost if not quite as good as those you have given; but there seems to be a difference of opinion as to whether the solar wax-extractor gets all the wax there is to be obtained out of the slumgum. Boardman stoutly insists that the large solar extractor that he uses does a clean job. If I remember correctly he sent us some of his slumgum in proof. We put it through our process, but the amount obtained was comparatively small. We discontinued the press several years ago. Instead, we save up our slumgum until some time when we can make a regular day of rendering it. Then we put it into our large steaming-vat, with four or five times the usual quantity of sulphuric acid, and let it cook and settle. Usually this strong acid solution will remove all the wax there is in the stuff. I know the residue will burn brightly when thrown into the fire; but Mr. Boardman says it is nothing more than propolis that he can not get and does not want.

I wish, friend Rapp, seeing that you are successful with the press, you would try a strong solution of sulphuric acid in the manner I have described; then take the residue and compress it in your press; if you then secure a large quantity of wax, we shall have to give up, perhaps, that the press is ahead yet—at least, that *your* press is, in your hands. —ED.]

* * *

THE SIZE OF WORKER COMB.

A Correction from Thos. Wm. Cowan, Editor of the British Bee Journal.

Dear Mr. Root:—On page 144 you refer to the "number of cells of worker comb to the linear inch." Will you kindly look at my "The Honey-bee; its Natural History, Anatomy, and Physiology"? On page 180 you will see that I say, "The average size of a worker-cell between the parallel sides is $\frac{1}{5}$ of an inch, or 0.2 (a printer's error makes it 0.02; but it is two-tenths of an inch). Then I go on, "We say 'average,' because considerable variation exists in different parts of the same comb, as both Reaumur and Huber found." I then go on to summarize the large number of measurements I took; and if you will read the details you will see what a variation there is. You say, "It has been said over and over again in bee-books and bee-journals, that there are five cells of worker comb to the inch, so that we have come to believe it;" also that Cook is the only authority you have run across who says worker-cells are a little more than $\frac{1}{5}$ inch; but in my book you will find that, out of 36 measurements that were taken, I found the greatest aggregate diameters of any one series of ten cells to amount to 2.11 inches, which you see makes them considerably larger than $\frac{1}{5}$ inch. On the other hand, the least came to 1.86, which makes them smaller. You will also see that, to reduce the possibility of error, I also measured a large number of series of 60 cells, which, if the cells are exactly $\frac{1}{5}$ inch, would occupy a space of 12 inches. However, in almost every case the 12 inches was exceeded, although not always. Please also note that, on page 181, I say that cells worked by Carniolan bees are larger. Nearly the whole of the chapter is devoted to the measurements of combs and cells; and as I know these were most carefully taken, with most accurate instruments, I am certain of my facts. You refer to Cheshire; but has it occurred to you to test his figures? He tells us the length of the worker-cell is $\frac{15}{32}$, whereas is is only $\frac{13}{64}$, showing his cell to be nearly double the right length. His cell, drawn on paper, would look like this :  How would a bee like it? A similar error is made with drone-cells, which he says are $\frac{9}{16}$, but which are only $\frac{9}{32}$ inch long. He criticises Langstroth, who shows a cell with an acute angle, and says, "100° is the limit the bee can reach," and that no angles of less than 100° are found. I have been able to confirm Langstroth's statement by showing similar combs, and demonstrating that bees frequently work at a less angle, even, than 90°. I also show that, in the matter of angles, these differ considerably when carefully measured with a goniometer. I have for a long time considered that we should use the expression "average size" as being the more correct, as I have not believed in a worker-cell being exactly $\frac{1}{5}$ inch. I see Mr. Weed uses the term "average worker-cell," which is about correct. THOS. WM. COWAN.

Loomis, Cal., Feb. 24.

[I am glad to get this, even though I do have to confess that I did not give your book the careful scrutiny that I should have done. I remember looking into it, and finding the sentence that "the average size of a worker-cell between the parallel sides is $\frac{1}{5}$ of an inch." Why I stopped and did not go further to take in *all* you said, I can not say. I shall have to acknowledge—indeed, I do so most cheerfully—that you have gone into this question far more thoroughly than any one else I know of. With regard to Cheshire, he who was so ready to point out the mistakes of others made a good many himself. If any writer lived in a glass house, he did. I am sorry to know that some of the glass seems to have been badly shattered. After all, he gave us much of value, even if he did make some glaring mistakes.

If I were not talking to Mr. Cowan's face, I believe I should say that, while his work is smaller, no one has pointed out an error in it, save the typographical one that he refers to above.—ED.]

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE

SETTING BEES FROM THE CELLAR.

Question.—Will you please tell us in GLEANINGS something about setting bees from the cellar — when it should be done, and how to do it? That is, give us your opinion in the matter, and your way of working.

Answer.—As to time of setting out, there seems to be a difference of opinion; and the only way to fully settle which pleases *me* the best is to commence and set a few colonies out early, then set out a few at a time till pollen becomes plentiful from soft maple and elm, at which time *all* are agreed that the bees should be on their summer stands. Some think that, by setting the bees out early in March, when the first warm days come, they will raise young bees in sufficient numbers to take the place of the old bees that are lost and worn out of old age later on, when they commence to gather pollen, so that, in case of early setting-out, there is little or no spring-dwindling; while others are equally positive that bees should in no case be set from the cellar till steady warm weather is likely to be here, giving the time for settled warm weather as commencing with the blooming of the trees named above. These last argue that, with the warm weather, each old bee will nurse and bring on to the stage of action from two to five young bees, hence there will be no spring dwindling, but, instead, a hive full of bees prepared for an early honey harvest, which could not be the case where bees are set out early, and using all their vital energies to nurse a little brood, which will not mature nearly fast enough to supply the waste of old bees which are lost in the cool weather of early spring, in their vain search for water, pollen, and early flowers. They do not argue that there is any scarcity of water at this time of year, but that the bees in going for it perish by the thousands in becoming chilled and benumbed by clouds passing over the sun, or by falling into the water. I have tried all ways, and must say that very much depends upon the way the season turns. Some years the bees early set out seem to do the best; other years those set out late have a decided advantage.

One year I did not set out the larger part of my bees till the elm and soft maple were past their height of bloom, and witnessed something I never saw before, which was, bees by the hundreds coming in loaded with bright red and yellow pollen, within half an hour after the colonies were placed on their summer stands. That it was possible for one old bee to be the means of placing on the stage of action five bees to take the place of itself, was abundantly proven that year; for, within 30 to 35 days from the time of setting out, many of these colonies were nearly or quite ready to swarm, and not a colony showed any signs of spring-dwindling. Within 21 days from the time of setting out, nearly every comb in the hive was filled with brood, and so perfectly solid that, when the young bees began to hatch, the hives were filled to overflowing in a very few days. However, to tell the matter just as it is, I am generally from ten days to three weeks in getting my bees out of the cellar, setting out from two to ten each fine day till all are out, and in this way I am quite sure of a full success with a part of them, no matter how the season turns. Long ago I came to the conclusion that it was not wise to have "all of the eggs in *one* basket."

Now as to how the setting-out is done. The first thing to do is to fit smoothly three or four thicknesses of old carpet or a horse-blanket over the wheelbarrow; and if the wheelbarrow can be one of the spring pattern, so much the better. The carpet or blanket is put on to take off all jar that there might be in wheeling the bees, for we do not wish to rouse them up any more than necessary. Having the wheelbarrow in readiness we next light the smoker, filling it so it will give a good volume of smoke as long as possible. With the two, and having our bee-veil on, we go to the entrance to the cellar, where we leave the wheelbarrow and smoker, and go in and get one of the colonies of bees, placing it in the wheelbarrow. As soon as this is done, puff a little smoke in at the entrance of the hive, so as to keep the bees from running out and stinging, which they are sure to do if no precaution is taken. Years ago I used to get stung terribly in removing my bees from the cellar, as bees which get into the air when being taken from the cellar are about the worst to sting of any during any time of the year. I did not carry the bottom-boards into the cellar, and in carrying out I picked the hives up and walked right on till the stand was reached; and in thus carrying, many bees would take wing, get into my clothing, and "sing" and sting, as they did not know where to go, having, as yet, no location established. Where the bottom-boards are not carried into the cellar, I now have them at the entrance on the wheelbarrow, ready for the hive as soon as it is brought out. Then with smoke and something to place up to the hive so as to close the entrance, I have no trouble. Where the Dr. Miller bottom-board is used, the same having a deep space on its under side, which is now up and under the hive, I use a piece of plank or scantling, sawed off the right length so that it will slip right up in front so as to close this whole aperture. Having the scantling or plank of the right dimensions, it is next covered with three or four thicknesses of common cotton cloth, tacking the cloth fast to it. The whole is now thrown into water and left a few minutes till thoroughly soaked, when it is taken to the cellar and placed in front before the hive is touched. This keeps the bees from coming out, or making much effort to get out; for as soon as they come in contact with the wet cloth they immediately make an effort to get away from it, rather than try to push by it; for if there is any thing a bee detests it is a "wet rag." Wet cloths are of great assistance to me in many places in handling bees.

As soon as the smoke is puffed into the hive the cellar-door is shut (having an assistant to close it is still better), so that the outside air shall not raise the temperature and thus arouse the bees inside, when the hive is wheeled to where it is to stand during the summer, the entrance adjusted, and the shade-board or cover put on. No matter whether I use the wet cloth or not, I always puff in a little smoke at the entrance as soon as the colony is on the wheelbarrow, for this not only helps much in keeping the bees quiet, but it also causes them to be slower about coming out of the hive, so that swarming out and confusion are avoided. As hinted at above, the bees are not all taken from the cellar at once, but from five to ten are set out in the morning of any pleasant day, and then as many more at night, beginning about three or four o'clock, according to the warmth of the day and the earliness or lateness of the season. This is to avoid robbing and the mixing of the bees. At the out-apiary they have to be set out all in one day, unless I think it advisable to go two days. But in all cases the hives are scattered over the apiary as much as possible at first, then filling in between, so that no two colonies will be in full flight at the same time, which nearly or entirely prevents all mixing of bees, so that one colony is not strong in bees while another is weak, as often happens when no attention is paid to this matter, as is the case with very many who consider themselves good bee-keepers. The bee-keepers who pay no attention to such matters remind me of the queer man who has lived and toiled for a great many years about the outskirts of Boston, and who by hard work has gathered together a good deal of property. During all of these years he has never paid a dollar for rent. He lives in a smoky old tent, which he moves from one place to another. He owns, however, a very beautiful house. He has built in the suburbs of that city an elegant six-story house, and many well-to-do people are his tenants, but he has never slept in his house himself. The old man hoards up the rent money which they pay him, and crawls back into his gipsy tent. In his fine house there are electric lights and gas-ranges, and every modern convenience and luxury; but he smokes himself over the smudge in his tent, and sleeps on a heap of straw. But before we condemn this man, as most of us would do on first thought, it might be well to ask ourselves whether we are giving the best or poorest of our natures to our beloved pursuit, bee-keeping. Are there not many of us who never fully enter into the high stories of the practical, intellectual, and scientific part of our pursuit — those who seldom meditate and muse upon the things that are to our best and highest advantage, but live for the most part in some smoky gipsy tent of thoughtlessness? Every one of us may live in a palace, with splendid windows for observation, and conservatories filled with the fragrance of flowers and the rich perfume of honey. Are we living there, or in the gipsy tent of don't care and thoughtlessness?

HEADS OF GRAIN FROM DIFFERENT FIELDS

ARTIFICIALLY RIPENED HONEY; ITS QUALITY; A CLIP AT THE EDITOR.

I have often heard the "old saw" that men of sense sometimes change their minds, but fools never do. In GLEANINGS, Jan. 1, p. 19, I see an editorial on "What I call Well-ripened Honey," that indicates that you belong to the first-mentioned class. I am glad to see you getting over on my side of the fence. I have for years advocated and practiced ripening honey outside of the hive; but the editor, and several correspondents, condemned the practice, and accused its advocates of ruining the sale of honey by putting such "vile unripened stuff" on the market, etc. Some years ago I sent you a sample, taken before a cell had been sealed, and it would shake like water from the combs, and ripened in the open air. You and your experts pronounced it to be as fine a sample, both in color and flavor, as you ever saw, but cautioned your readers not to attempt to ripen honey by that process, as "none but an expert could be successful." Thank you for the compliment to my ability, but let me hint that you and "the other feller" can do it as well as I. You were so well pleased with the sample that you wrote immediately, offering to buy my crop; but it had already been sold at a large advance over prices quoted in market report.

The past season's crop, taken in the same watery condition, and ripened in the air, was sold early, in ton lots, at a cent a pound over the highest price I have yet heard of any other California producer getting. I believe that just as good quality can be had in this manner as by allowing it to ripen in the hive, and a greater quantity also, and it is certainly easier work. In this locality, if honey is left in the hive as long as advocated by some of your correspondents, it would be "vile stuff" indeed, owing to the tarweed and other dark and strong honey which follows closely on the white-honey yield. I practiced your process of ripening in the house, for several years in Indiana, without waiting for combs to be sealed, with good results. DELOS WOOD.

Santa Barbara, Cal.

[It was the senior editor who cautioned our readers against ripening their own honey. I don't know that *I* have ever taken a stand on the merits of artificially ripened and bee-ripened honey. But that honey "over at the house," in open vessels, is just fine. We can almost chew it now like so much gum — beats comb honey by considerable, in my estimation. But it's no disgrace to change one's mind. I have done it several times.—ED.]

DENSITY OF HONEY.

Mr. White's excellent article on well-ripened extracted honey came up at the meeting of the directors of the California Bee-keepers' Exchange, March 1. The density of the goods must exceed 12 lbs. was the unanimous sentiment as expressed. At that time every one was blue. We have had a good shower since. I now see no good reason why we may not have a honey crop in this part of the State if we have showers occasionally, if other things are favorable. Bro. White can get honey he can depend upon of the California Bee-keepers' Exchange. H. I. MORSE.

Hemet, Cal., March 12.

[There is no doubt but that the density of California honey is a little greater than that of eastern honey. The dry climate has a good deal to do with it, I suspect. To my notion, honey that is 12 lbs. to the gallon is several notches better than the 11-lb. article.—ED.]

PLAIN SECTIONS VS. SECTIONS OPEN ALL ROUND; WHICH WOULD BE CHEAPER?

I have been watching the writers in the bee-journals in regard to the fence-supers, and find most of them think the greatest advantage gained by the fence is to give the bees freer access to all parts of the super. Now, I believe it to be a good thing to have your super so arranged that the bees can go east, west, north, south, up, or down. This can be accomplished fully without the fence, and cheaper, with fewer pieces to handle. How? By using sections *bee-spaced all round*. These I have been using for two years with good results. The bees go to work readily, and I have fewer *bulged* sections, or sections only partly filled, than from any other sections that I have used.

As to separators, I threw them away long ago. My sections filled with separators looked lean and gaunt, while those filled without them looked fat and full, yet not so full but they would crate nicely. Now, then, if sections that are spaced all round will give the result desired (better access), why handle a great lot of lumber for nothing? It would seem this was progressing backward. Simplicity should be the order of the day, and not complication. I should like to hear from some other bee-keepers who have tried this kind of section. Perhaps, after all, we are not needing this kind of extra "fixin'."

Atwood, Ill., Mar. 7. J. W. C. GRAY.

[I do not think there is any doubt at all that better-filled combs can be secured in what is known as the open-all-around sections, or what our English cousins have called four-bee-way sections. While it is true you may be able to dispense with separators, there will be hundreds of others who could not and will not.

You speak of the cost "of a great lot of lumber for nothing." You overlook the fact that in future, at least, plain sections can be sold much cheaper than the old-style bee-way section; and that the cost of the plain, including fences, would be less than the cost of sections open all round with separators.

But plain sections are especially adapted to be used without fences or separators. See editorials.

ASHES FOR DAMP MOLDY BEE-CELLARS; A GOOD SUGGESTION; SUB-EARTH VENTILATION.

Do ashes destroy mold and dampness? Last fall, when we put the bees into the cellar the bottom of it was damp. There was water in it in the spring, and it had not dried out yet; and when dead bees began to accumulate on the cellar bottom I discovered mold on them, and, in fact, there was considerable mold on the cellar bottom. My wife read in some paper that wood ashes are good to destroy mold, if sprinkled around in the cellar, or any place, for that matter, where mold is found. So, as our cellar was damp and moldy I sprinkled ashes as evenly all over the floor as I could; and, to my surprise, in a short time I could not discover any mold to speak of in any place in the cellar, and the bottom of the cellar is almost entirely dry; so I am giving the ashes (and my wife) credit for it.

I wrote Mr. Kretchmer once about our cellar causing the combs to mold, and asked if his was so. He said not, as there was a 30-ft. flue to his house, that started on the cellar floor, and that gave good ventilation; hence no moldy combs. We have no flue in our cellar, and I should like to know if putting a tile through the cellar wall, and letting it come out and connect with the outdoor air would give the proper ventilation. How far should it go before it opens to the outside? Had I better depend on ashes keeping the cellar dry and sweet?

One man wrote in GLEANINGS a short time ago about bees in a 10-frame hive with only 8 frames and dummies at the sides. What I want to know is, do the bees work in the outside set as well as if there were 10 frames in?

Bedford, Iowa. J. S. WILLARD.

[The kind of tiling you refer to, running under ground to a point inside of the cellar, near the floor, is called sub-earth ventilators. They are anywhere from six inches up to a foot in diameter, sometimes square but generally round, in which case, of course, they are of tile. These ventilators run under the ground from 50 to 100 feet, connecting with an upright ventilating-shaft reaching up a foot or so above the ground. If the cellar is on a hill, the ventilator runs out on the horizontal until it reaches the surface of the ground. It is then covered with wire cloth to keep out rats, mice, and cats.

At one time there was a good deal said in favor of these sub-earth ventilators, especially if used in connection with a pipe running close to the floor of the cellar, and connecting with the chimney of the room above. The last-named pipe is designed to carry away the foul air, while the sub earth ventilator brings in the fresh. The reason for running the pipe a distance *under ground* was to warm the air before it entered the cellar, and so far as it accomplished this object it was partially successful; but, strangely enough, reports seem to show, in many cases at least, that bees wintered no better in elaborately constructed cellars than in cellars without any ventilation whatever. Why this was so can be accounted for only on the ground that the bees got too much ventilation—that is, too much cold air. The owners of the cellars in question would fail to close the ventilators on very cold nights.

Notwithstanding what has been said all along against the sub earth ventilators, Dr. C. C. Miller and G. M. Doolittle seem to think they are a good thing. The former puts a small coal-stove in his cellar, not to raise the temperature, but to stir up the air and carry out the foul air when the bees become a little uneasy. He thinks a stove has much to do in quieting the bees.

Bees will not work so well on the two outside combs of an eight-frame brood-nest as if there were still two other combs outside of these, providing, of course, there were enough bees to cover all the combs.—ED.]

PRODUCING COMB HONEY WITH TWO LANGSTROTH BROOD CHAMBERS.

Mr. Editor:—I have read with much interest what you have said at different times regarding the use of two brood-chambers instead of one, even when working for comb honey. I have experimented some along that line, and expect to do more of it. I believe the use of two eight-frame brood-chambers will result in large surplus, less swarming and manipulation, but how to dispose of those extra brood-chambers during winter is what bothers me. I suppose the best way would be to get the bees all into one brood-chamber, with the best-filled combs of honey, and store the others to be placed back in the spring. I should like to try a hive for comb honey composed of two ten-frame hive-bodies (dovetailed) in which the frames would be about seven inches deep, latest Hoffman style. Such a hive would possess all the good features of any of the interchangeable-brood-chamber hives, and the parts would be light enough for easy handling; but I should want to use over this hive only supers for comb honey of same width as used on eight-frame hives. That would necessitate something to stop up the opening on each side of the super. If such a super were used on such a hive I believe the outside row of sections would be better and more evenly filled. Bees do not like to fill sections that extend beyond the actual brood nest on either side. Don't show this to C. A. Hatch or he will say I am getting over on to his side of the fence without due ceremony. May be I will try both sides a while. One thing I can say at this date — bees so far have wintered in splendid shape, and the abundance of snow this winter argues favorably for a honey crop for us Wisconsin bee-keepers. HARRY LATHROP.

Browntown, Wis., March 10.

[I am satisfied that, in our locality at least, more honey, either comb or extracted, can be secured by working two Langstroth-depth brood-chambers than by trying to work one brood-chamber. Three different seasons have pounded that fact into my head. You ask what we do with the extra brood-chamber at the close of the season. We leave it on the hive till toward fall, if it has brood in both stories. Along in September, ten chances to one we will find the bees, and what brood there is, all in one brood chamber—probably in the top one. We remove the other one, and confine the bees to one hive-body, or the one they were in. If, after the honey-flow has closed, and one of the brood-chambers contains a set of extracting-combs with no brood in it, we take them away and give the bees a set of empties instead; but if they can be crowded into one brood-chamber, we take away brood-chamber, combs and all. There is no trouble, in my experience, resulting from the use of the extra brood-chamber.—ED.]

FACING COMB HONEY.

On p. 83 friend Snyder gives some plain statements on the facing of comb honey in cases among some of the dishonest bee-keepers. We can not doubt that his words are true in many instances. Praise the Lord! As for me, I could never misrepresent any thing knowingly. I always grade my comb honey, and then put each grade in its respective case, taking the sections as they come to hand in their regular order, placing them in the same manner in the case.

Since the kind editor rather courted the airing-out of his family of bee-keepers along the way as above mentioned, I felt prompted to give in my testimony, hoping that friend Snyder's experience will benefit each producer of comb honey. M. A. SIMON.

Bloomdale, Ohio.

BEGINNERS QUESTION BOX

BY E. R. ROOT.

J. N., Ohio.—The earliest printed literature that we have on bees is Butler's Feminine Monarchy, printed in 1609. Perhaps the earliest reference we have to bee culture, and that very rude, is found in the Georgics of Virgil, who died 19 years before the birth of Christ; but the use of honey is contemporaneous with all human history. The earliest reference to the sectional honey-box was away back in 1868. This is in Kidder's book, "Secrets of Bee-keeping," page 174.

A. S., N. Y.—I am very strongly of the opinion that our Ideal sections will run about 13 or 14 oz.—certainly not over 15. If you glass your honey it would in any event be below the 16-oz. mark. A width of 1⅜ might not run more than 10 oz., and that would possibly be too light a weight for you. Letters are coming in that indicate that the plain sections will hold slightly less honey than the same section just enough wider to take in bee-ways. If this is the fact, then our 1½-inch Ideal will run about right in weight for your purpose.

C. N. D., Tenn.—It is impossible to give you an estimate of just how many pounds of honey you ought to expect from each of your seven colonies. Your own skill and general knowledge of handling bees, and the season, will have every thing to do with it—more particularly the last named. Some years there is little or no honey to be had from the fields. But with so small an apiary as seven colonies there is no reason why you ought not to be able to get under fair conditions, and a fair season, 25 lbs. per colony. With good management and a good season you might secure 100 lbs. per hive.

F. M., Mich.—Where one expects to winter his bees out of doors right along, and it is a question whether he'd better use the single-wall Dovetailed or the double-walled chaff, we would recommend the latter by all means. The light two story chaff hive, illustrated on page 9 of our catalog, is but little heavier than the regular single-walled hive of the same dimensions. We use it very largely in our own apiaries, and prefer it to the single-walled hive because it is so little trouble to put the bees into condition for winter. You will notice, besides, the alighting-board has an enlarged entrance, which is quite an advantage; see Fig. 18.

F. W. D., N. Y.—We consider the starvation method described in our A B C book as the best and most reliable, as well as the most economical way of treating foul brood. We do not recommend complete extermination except in rare instances. The chaff hives will be fit for use again, after they have been scalded inside. You can, however, paint the inside with coal oil, set fire to it, let it burn till the inside of the hive is charred, then throw in a small quantity of water, and clap the cover on. The steam thus generated and confined will arrest the fire at this point, and render the hives perfectly safe for use again.

S. J. F., Fla.—For various reasons we could not give you the names of dishonest commission houses, the principal reason being that we should thereby render ourselves liable. If you are a subscriber to GLEANINGS you will see that certain houses, whose names used to appear in our Honey Column, are conspicuous by their absence from that department. We do not say that they were dishonest, but we do not consider it to the interests of the bee-keeping public that their names should continue in that department.

F. C., Utah.—The refuse from your wax-extractor can be further refined by means of sulphuric acid. To every pailful of water, put in about a tablespoonful of commercial sul. acid. Pour about three pails of water into the barrel, throw in the refuse, turn on a jet of steam, heat the water to a boiling temperature, then let it stand for an hour, after which dip off the free wax from the top, being careful not to stir up the liquid too much. In using sulphuric acid it is necessary to use a wooden receptacle and steam. An old iron kettle might do, but a copper kettle must not be used. You will find full particulars in late editions of our A B C book, under the head of "Wax."

X. Y. Z., Conn.—We don't know just exactly why the sugar syrup should candy unless it is because you feed it too thick. It should be made in the proportion of one half sugar and one-half water, by weight or measure; but I am surprised that you would think of feeding it for filling out sections. If it were known that you sold such honey you would have a bees' nest of bee-keepers after you. Possibly you *sell* it as sugar-fed honey, but even then you would call down the wrath of the fraternity at large. I do not think you will find it will pay. It is hard enough to make it pay, even when you get the nectar of the flowers for nothing; but if you have to buy that nectar, and go to all the fuss and bother of making thin syrup and feeding it—well, I think it will overbalance the gain.

J. G., Can.—To tin a soldering-iron, take a common brick and scoop out of one of its faces a depression about the size and shape of a table-spoon. Fill this space with common pulverized resin. Next take the iron and file off its four faces bright and clean; heat it to about soldering-temperature; clean it with a moist rag, and then rub the iron in the pulverized resin in the brick; at the same time apply the bar of solder; work the iron back and forth, revolving it until the faces of the iron are covered thoroughly with the tin. In order to do a good soldering job on the honey-cans it is necessary to clean the tin thoroughly. The parts should be either scraped or filed By working right you can usually solder such places with common resin. You can use acid, but it is better not to use it, for every thing of this kind is apt to corrode and make matters worse.

EDITORIAL BY E. R. ROOT

EIGHT extra pages.

M. H. MENDLESON, in writing of the situation in California, says:

> There will be a big loss in bees in this State, and the loss by stockmen will be very great. This is claimed to be the dryest year for over 34 years. Many a good man will lose all he has made by many years' hard labor. M. H. MENDLESON.
>
> Ventura, Cal., March 11.

It looks now as if there surely would be no California honey of any consequence, of the 1898 production; and a good deal of the '97 honey that was held over to sell this season will have to be used to feed back to colonies to keep them from starving.

MISQUOTING.

WHY will some of my good friends so persistently misquote what I have said about the fence and plain section? One friend implies that I have said there would be absolutely no peek-holes or corner-holes in the new sections. I should like to have that person point out the sentence or sentences wherein I have used such language. Again, another corrects me by telling me that the plain section and fence are not new, but older than the hills. Those of our readers who have read carefully what I have written know that I have said repeatedly that they are almost as old as any thing we use in beedom. Why will other folks set up a man of straw, call it *my* man, and then proceed to knock it over—*with clubs I myself have furnished?*

FOUL BROOD FROM ROTTEN BROOD.

WM. MCEVOY, Foul-brood Inspector for Ontario, Canada, has maintained, and still insists, that "foul brood is a disease that is caused by the rotting of uncared-for brood." I have held that dead brood, either by chilling, overheating, or starvation, would not of itself cause the disease; that there would have to be, in the first place, the germs, and from these germs would arise foul brood; in other words, that corn would not grow where no corn was planted. While I still think so, I am willing to admit that there is much of truth in Mr. McEvoy's statements; namely, that dead or rotten brood may be a favorable medium for the germs of *Bacillus alvei* to work in, in the same way that good rich ground will grow celery better than poor ground. If there is any truth in the statement that foul brood proceeds from dead brood or rotten brood, it is because there are already germs in the hive; and these germs, finding lodgment in the dead brood, give rise to the disease, when, if the brood were all healthy, they would not be able to make a start.

NO-BEE-WAY SECTIONS ADAPTABLE TO THE NON-USE OF SEPARATORS OR FENCES.

SOME bee-keepers somehow manage to get along without separators, and, while admitting that the great majority can not do so, it may not be amiss to suggest that plain sections may be better adapted to be used without dividers than the old bee-way sort. Why?

When A. I. R. was visiting W. K. Morrison, of Devonshire, Bermuda, the latter talked a good deal about using sections in supers without separators; and now that plain sections had come to the fore, they were just the thing. I do not know personally just how he would dispense with the separators, but I suspect by putting them in supers (say T supers, for instance), sections spaced about $\frac{2}{12}$ inch apart, without any separators or fences between them. According to Mr. Morrison's idea, a row of plain sections right along together, having even edges, and without any separators between them, would give almost the same condition that exists in the brood-chamber. There would not only be no separators between the sections, but there would be *continuous passageways from one section to another.*

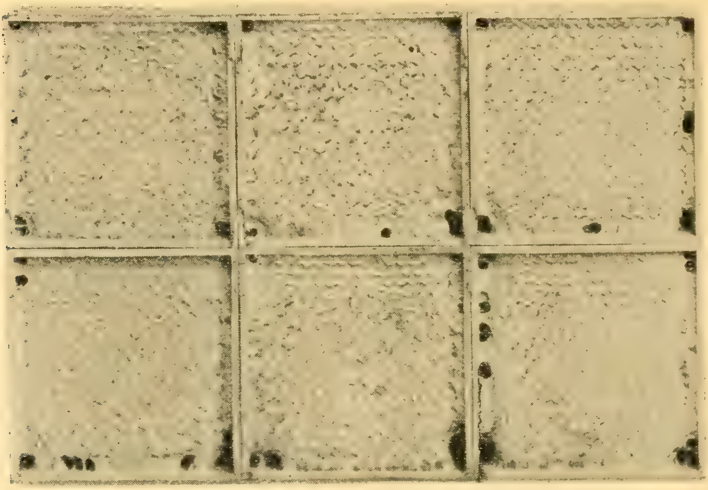
I have been talking with Mr. Chalon Fowls, of Oberlin, O., who is visiting us to-day; and while he has never tried it he seems greatly interested in the plan. He for years produced his comb honey without separators, in old-style sections. He liked the new plain sections, but would prefer to use them without separators or fences, and I explained to him how it could be done. One of the methods suggested was to use the old-style double-tier wide frames that many have in their garrets or barn-lofts. Into these put the plain sections, and space them exactly in the center; hang them carefully in the super, without any separators or fences between them, and, presto! we have a lot of thick brood-frames, as it were, divided off into four compartments, which the bees will regard, possibly, very much as so many extracting-combs, having cross-sticks, we will say, running perpendicularly and horizontally through the frames.

Now, please do not get the impression that the new fence is the all-important thing or fad of the day. The fence is only secondary in importance. It is the plain section that seems about to revolutionize the present methods of comb-honey production. For those who must use separators, then of course the fence, or something equivalent, will have to be used.

Personally, I don't believe it would be profitable to dispense with separators or fences in most localities; and this reminds me that locality has every thing to do with the matter. If the honey-flow comes in spurts, with a let-up and a rush, then dividers of some sort, to my notion, would have to be used. If, on the other hand, it is slow and continuous, without any spurts, then, with the right management, they may, perhaps, be dispensed with.

ASPINWALL'S SECOND-QUALITY HONEY IN PLAIN SECTIONS.

SHORTLY before that characteristic engraving appeared in the *Bee-keepers' Review*, showing honey in plain sections and honey in bee-way sections, and which we reproduced in our columns on page 128, I wrote to Mr. Aspinwall, asking him to send us a photo showing a representative lot of his honey. He replied that he had already sent his best sections to Mr. Hutchinson, and that he presumed a view of them would be given in the *Review*. However, he would have a photo taken of some of his next grade. This he did and sent it on, and the engraving herewith shows what Mr. Aspinwall calls second-quality honey in plain sections. I suppose he called it "second quality" because it had peek-holes in various places. If that honey had been reproduced in old-style bee-way sections we should have called it "extra quality." At all events, I think it would fill the bill for Fancy as per specifications adopted at the Washington convention.



ASPINWALL'S SECOND-QUALITY HONEY IN PLAIN SECTIONS.

No wonder Mr. Aspinwall has sold off all his first-quality, and had very little left of his second. I am just Yankee enough to want to know how much this comb honey netted him for first and second quality. During the past year, average comb honey in old sections did not run, I think, over 10 cents on the average to the bee-keeper, and perhaps not that after freight and other expenses were taken out. Perhaps Mr. Aspinwall will tell us something further about it in the *Review*.

W. F. MARKS, OF NEW YORK STATE; THE SPRAYING-BILL; APIS DORSATA.

YESTERDAY, March 24, we had the pleasure of a visit from Mr. W. F. Marks, of Chapinville, N. Y., a bee-keeper whom I called on while making my last bicycle-trip through that State. My visit to his place is described on page 57 for last year. Ever since I met Mr. Marks I have been impressed with the fact that he is one of the leading and influential bee-keepers in his State; in fact, he is a born fighter. It was largely through his engineering that needed legislation was secured against spraying while fruit-trees were in bloom. Everybody opposed him except intelligent bee-keepers; but, with that indomitable energy which is characteristic of the man, he whipped bee-keepers' associations, farmers' clubs, college professors, experiment stations, Senators, and Representatives into line. Mr. Marks has recently been made president of an association that is about to combine all the bee-keepers' societies of the State into one effective working organization, and I expect to see things hum in that State soon.

I have suggested that he look after needed foul-brood legislation in his State. If he takes hold of it he is bound to get what he wants.

He is an enthusiastic bee-keeper; and, besides pushing measures calculated to benefit the whole fraternity of the State, he has done some experimenting on his own account. He has been testing sandpaper, sand-wheels, etc., for cleaning propolis from sections; and although he has tried all grades of paper, from fine to coarse, he has come to the conclusion, after repeated tests, that sandpaper will fill up or gum up with propolis too soon to make it a success. He does not claim that machine section-cleaners can not be made to work, but only says that *he* so far has not been able to obtain satisfactory results.

In talking with friend M. regarding T supers and section-holders he expressed himself decidedly in favor of the latter; could not see how Dr. Miller or any one else could prefer the T super, and he has given both a thorough trial if I am correct.

Our readers will also remember Mr. Marks as one of the ardent champions of *Apis dorsata;* and while I at first opposed any movement on the part of the government, looking toward the importation of these bees into this country, believing it was an effort in the wrong direction, yet friend Marks whipped me into line—that is, to his own way of thinking. And he whipped, later on, the whole, or nearly the whole, Buffalo convention into the same channel. The result was, he secured a resolution which was at least not unfavorable to the big bees.

He had with him, here at Medina, some of the dorsata in a small vial of alcohol. If you can imagine nice Italians soaked in alcohol, one-third or one-half larger than usual, you will have a fair idea how these bees look. Of course, there are minor structural differences; but the casual observer would almost call them mammoth Italians. Mr. Marks is more sanguine than I am of the value of these bees in the way of fertilizing certain fruit flora of the country that is now inaccessible to the ordinary honey-bee by reason of the depth of the flowerets or pollen cavities which they can not reach.

NO-WALL FOUNDATION, AND FOUNDATION WITH WALL RUNNING 18 FEET TO THE POUND.

QUITE a little has been said of late in several of the bee-journals in regard to the no-wall foundation. Our readers will remember that, at the Michigan convention a year ago, the members contributed toward the purchase of a machine that would make that article. We made the mill, and subsequently no-wall foundation was made from it running 15 or 16 feet to the pound. This has been tested by several of the Michigan bee-keepers, prominently among whom was Mr. T. F. Bingham, of smoker fame. They found bees would accept it, and in their judgment there was less of fishbone than with the ordinary foundation having walls. But all experienced one difficulty with it; namely, that it curled up or warped somewhat during the process of drawing out by the bees. In a recent article in the *American Bee Journal*, Mr. Dadant attributes this curling to the manner of *milling* the wax, saying that sheets should leave one roll instead of parting from both rolls at one and the same time.

Somehow, our own experiments lead me to believe that no-wall foundation can not be made a success as compared with the light-weight wax with wall. We are satisfied that, in the near future, we shall be able to turn out foundation with walls running *18 feet to the pound*, and beating all our previous records. Indeed, we have already milled a considerable quantity of it running at that weight. If we were to eliminate the wall, the wax might run 20 or 22 feet to the pound; but in my opinion the wall is necessary to prevent sagging and curling of wax so light as this, no matter how the sheets are milled, or, rather, how they come off the rolls. The machine on which this very light weight foundation is made is constructed on an entirely different principle. But more anon.

On a similar machine embodying the same principle of construction, we hope to make a brood foundation fully as strong as the ordinary brood running 9 to 10 feet to the pound. But the bases of this new foundation are as thin as the bees make them; namely, $\frac{3}{1000}$ of an inch, instead of $\frac{20}{1000}$ of an inch as in the old brood foundation. The no-wall foundation that came off from the mill that we made, running 15 to 16 feet to the pound, had bases about $\frac{10}{1000}$ of an inch thick. It will be seen that this is three times as thick as that which has walls running 18 feet to the pound, off from our latest mill. But this is not all. Our experiments show that the bees will not thin the bases, but they will reduce the walls. If they will thin the walls, however thick, to natural thickness, don't you see that the resulting comb will will be as light as natural built? But if they will not thin the base of the no-wall foundation $\frac{10}{1000}$ thick then I don't see but that the result will be fishbone in the comb.

N. B.—We are not ready to sell 18-ft. foundation in quantities, nor mills for making the same.

WHAT'S the matter with bee-keepers this year that they are going in so heavily for supplies? Beyond the fact that bees have wintered well, there is no indication that the season will prove to be any thing remarkable.

REPRESENTATIVES OF THE U. S. B. K. U. AT THE PURE-FOOD CONGRESS.

EDITOR ABBOTT, of the *Busy Bee*, who was one of the delegates, together with Eugene Secor, appointed by the Executive Committee of the U. S. B. K. U. to attend the pure-food Congress at Washington, March 2, has this to say concerning the result of their visit:

> There were nearly 300 people in attendance, and almost every leading productive industry of the land was represented. The writer and General Manager Secor went as delegates, at the request of the President and Board of Directors, to represent the United States Bee-keepers' Union. As there was considerable expense attached to such a long trip I had some doubt at first about the propriety of sending delegates; but the moment I reached Washington, and saw the class of men there present, and the industries which were represented, all doubt was dispelled. One of the leading ideas of our Union is to "prevent the adulteration of honey," and more was done at Washington in co-operation with other industries in two days than we could do in years working alone. What we want and need is a national pure-food law covering every article of human consumption for either food or medicine, and we seem now to be in a fair way to get it; and the members of the United States Bee-keepers' Union can feel that they have had a hand in the making of it. Your delegates received the fullest recognition on the floor of the congress, and bee-keeping at once took its place along by the side of other trades and industries, and was recognized as a part of the great movement for pure food and common honesty, which is sweeping over the country from Maine to California. Mr. Secor was placed on the committee on credentials, and the writer was made a member of the committee on permanent organization, and was subsequently elected chairman. Later Mr. Secor was appointed a member of the committee on resolutions, and myself a member of the legislative committee of 25 to consider the "Brosius bill," and report to the congress. We were also made vice-presidents for our respective States. I do not mention these things to bring myself and Mr. Secor into prominence, but to let the bee-keepers know that our union received full recognition by the other industries.
>
> The congress elected Mr. Blackburn, the present food commissioner of Ohio, and a gentleman of sterling worth and wide experience in pure-food legislation, its permanent president; and I take pride in saying that, as a member of the committee on permanent organization, I had a hand in presenting his name to the congress. He proved to be the right man in the right place.
>
> I have not the space to give a full account of the meeting, but will say that the unanimity of sentiment and feeling manifested by the representatives of the various industries of the country on the subject of pure food points to the fact that a powerful influence will be brought to bear on the Congress of the United States, when the bill comes before it, for its immediate passage. The reader can help to swell this influence by writing to his Congressman and the members of the Senate from his State, saying that their constituents ask that, when the bill recommended by the pure-food congress comes up for passage, they give it their hearty support.

I do not believe that any member of the Union will begrudge the money expended, in view of the fact that we have secured the recognition we have. Abbott and Secor are active workers — the former is bound to make himself *felt* on the floor, and evidently did at the Congress; and the latter is a wise and efficient committee man.

I somewhat question, however, the wisdom of hitching on to a pure-food law the matter of patent medicines. If there is any combination of capital that will fight this law it will be the gang of quack dosers; and I question the wisdom of imperiling needed legislation along the line of pure food, by hitching on to it a drag that may prevent its passage.

The suggestion made by Bro. Abbott, in his last paragraph, is most excellent, and the only way to make it effective is for our subscribers, at once, before they forget it, to write to their members of Congress. We may be sure that the glucose-mixers and the patent-medicine men will not only be putting up capital, but will be sending in scores of protests.

It is a great gratification to me to know that our Ohio Mr. Blackburn is permanent president. We Buckeyes know what good work he has done in the interests of pure food. The quacks and the food adulterators have been leaving no stone unturned to put him out of office; and the worst part of it is, they have secured the influence of some reputable daily papers (which see filthy lucre — from their "ads") to fight him. But he knows he is right, and is standing by his duties like the fearless soldier that he is. Certainly we bee-keepers will hold up his hands in this great fight. Write to Food Commissioner Blackburn, and tell him to give the adulterators more "hot shot."

HEALTH NOTES

BY A. I. ROOT

I confess it is a little comforting to know that the Dairy and Food Commissioner of the State of Ohio has got down to the business of exposing injurious and fraudulent patent medicines. A bulletin has just been published, entitled, "Address Delivered before the Ohio Editorial Association." I wish every father and mother and every one else in the land could read it; and I presume it can be had by addressing Jos. E. Blackburn, Dairy and Food Commissioner, Columbus, O. Now, I can not copy as much as I should like to do from this bulletin. But just let me give you a paragraph :

> Several months ago one of my chemists mentioned the name of a well known catarrh cure, and stated that in a certain Massachusetts town it began to be generally used among the employees in a large cotton-mill. The label stated that it contained cocaine. In a short time the persons using the preparation learned that it was the cocaine that gave the temporary relief sought for, and they began buying it directly at the drugstores. In a few months, nearly the entire working population of the town was completely demoralized from its use.

From the above you get a glimpse of the reason why medicine-venders can offer free samples of their stuff and pay the postage. One free sample bottle may get a whole town to patronizing them. How much better is it than offering schoolboys intoxicating liquors free of charge in the shape of beer or summer drinks? Let me give one more case that illustrates how these drugs will capture a person, body and soul, when he once gets started :

> One incident occurs to me that will illustrate the persistency with which these fiends will pursue the object of their enslavement. A woman in Wheeling, West Virginia, happily married, and the mother of two children, became addicted to the use of chloral. Her husband notified the druggists not to supply her. She came to Bellaire, and secured a prescription for it. I filled it myself. She returned in a few hours to have it refilled, telling me that she had accidentally spilled it. The next morning she came again, and said that she had dropped the bottle and broken it. I again filled it; but my suspicions were aroused, and I telephoned the physician who had written the prescription. He said he knew nothing about the case except that he had prescribed it for her at her request, to allay some nervous pain. The next time she called I took the bottle, destroyed the label, refused to refill it, and would not allow her to have a copy of the prescription. She became frantic; she offered the entire contents of her purse for one dose, but I refused. She then begged, appealed, and finally wept, and, becoming desperate, attempted to disrobe in the store. The interview ended by my forcibly putting her out of the store and ordering her never to come back. I afterward heard that she abandoned her family, and entered upon a life of dissolution and dissipation.

Now, then, dear readers, I do not know but I shall have to take some of my own medicine. Some of you may remember that, when I was in Atlanta, Ga , I bought a bottle of Perry Davis' pain-killer, and actually gave it quite a write-up because it gave me relief, and cost only 20 cents a bottle. See the following:

> "The sale of soothing syrups, and all medicines designed for the use of children, which contain opium and its preparations, should be prohibited." I copy a part of the list published by the Board of Health as containing opium :
>
> "Piso's Cure for Consumption."
> "Jaynes' Expectorant."
> "Perry Davis' Pain Killer."
> "Mrs. Winslow's Soothing Syrup."
> "Coe's Cough Balsam."

I should be very glad indeed to take back or contradict what I said in favor of the pain-killer; but thousands of that journal were sent off broadcast, and a great part of those who read my recommendation, and perhaps bought the pain-killer, will never see it at all. You see how it behooves us to be *careful* about recommending medicines to our friends. Of course, the manufacturers of these preparations, and a good many of the druggists, are waging war hot and heavy on the Ohio Food Commissioner. The pamphlet I allude to was published mainly in order that he might give his reasons for the course he had taken. The Ayer Co., I believe, have been waging war in the shape of suits at law, more than almost any one else. Now, then, shall the patent-medicine men, the opium and cocaine venders, with their great wealth, choke out or "snow under" this effort that our State of Ohio is making to save our people from the terrible effects of these deadly drugs? For my part I begin to think I would rather *be* sick than be cured with something that "comes out of a bottle." Hold on a little. Let us put it this way : If I am going to be cured by something that comes out of a bottle, I want it administered by somebody who is a personal friend of mine, and one who would not give me poisonous drugs when I told him how I felt about it; and that person shall be *our family physician*.

OUR HOMES,

BY A. I. ROOT.

A bruised reed shall he not break, and smoking flax shall he not quench.—ISA. 42 : 3.

When I was in Bermuda I was a good deal surprised to read in one of the local papers of the island a protest from one of the soldiers. The whole island of Bermuda, or at least a good part of it, is covered with military defenses, forts, etc., and I greatly enjoyed witnessing the military parades and getting acquainted with some of the soldiers. Well, this protest from a soldier was to the effect that some of the boys on the island were getting to be very rough. He said he and his companions had been "sassed" and stoned; in fact, one of the soldiers had his face badly cut open with a piece of rock; and I tell you, a chunk of coral rock, even if it is not very heavy, is a bad thing to strike one in the face. I remarked to friend Morrison, after reading the paragraph, "Why, friend M., how dare anybody molest soldiers? I supposed they were like policemen or officers of the law; that they had authority to arrest and imprison boys or anybody else for such an offense."

"Oh! you are quite wrong, friend Root. One of the very first elements in a soldier's training is that he must stand his ground, and put up with almost any indignity, without showing either temper or retaliation in any shape. The *Queen's* soldiers, in fact, are expected to stand still and be shot, rather than to commence any sort of warfare without orders."

"Then their beautifully kept guns, bayonets, and other arms, are simply for show, and not to be used, even in self-defense?"

"They are not to be used in self-defense unless they have *orders* to use them."

Come to think of it, I believe this is military training in almost any part of the world—that is, as friend Morrison expressed it. Troops are frequently called out to keep the peace in our own State of Ohio and other States; but if they are true soldiers they will resort to almost any thing else under the sun before they will use their implements of war with which they are well provided. In fact, this has been so universally the case that a great many times the lawless mob have taunted them with it, telling them they dare not fire; they were only "dudes set up to make a show." When, however, forbearance ceases to be a virtue, and the order is given to fire on the mob, who are bent on the destruction of property, or something of that sort, even in such a case the soldiers have been loudly condemned because they did use their weapons. In matters of law the government of the United States has been so slow a great many have had the idea the government never would do any thing, and did not *intend* to do any thing. Sometimes *I* have been tempted to complain because the strong arm of the law was so *very* slow to move. But of late years I have begun to think it is well and wise that these acts are done with such extreme deliberation. Don't be in a hurry to quarrel, either in public life or private. If you turn to the chapter that contains our text you will find at the top of it—at least it is so in my Bible—"The office of Christ graced with meekness and constancy." In the first verse the prophet tells us that God has put his spirit upon Christ the Son. In the second verse we are told "He shall not cry nor lift up nor cause his voice to be heard in the street." Whatever he does shall be done so quietly that no disturbance will be made. Many people will not know any thing is being done at all. Then we come to the text. His mission shall be performed so gently that even "a bruised reed" shall not be broken in two; and the smoking flax, that is so easy to put out by just stepping on it, shall not be quenched. And yet we are told in the same verse, "He shall bring forth judgment unto victory and truth." In the fourth verse we read: "He shall not fail nor be discouraged till he hath set judgment in the earth; and the isles shall wait for his law." Even that little gem of an island away off there in the sea, beautiful Bermuda that I think of so often, shall be converted to Christ. And I can not help thinking that it is comparatively near the kingdom already. There may be a few unruly boys there such as the soldiers met; but by far the greater part of them respect the Sabbath and go to church. Some little girls in our neighborhood, from seven to twelve years of age, walked a mile and a half and back to meeting in the morning, and the same distance again to the evening service, even when there was not any moon.

But we are to talk about getting along in the world *without* warfare. I shall confine my remarks mostly to a warfare of words. You know my doctrine is, that a husband and wife should never part; and when the two become father and mother, *then* most assuredly should they two hang together "till death" and nothing else separates them. Well, I have been thinking for a few days that not only should husband and wife hang together, but as a rule I would have employee and employer keep right along—at least, so long as one wants a helper and the other wants a place to work. There are now something over 200 at work at the Home of the Honey-bees. Some of them are good and faithful, and some indifferent; but God forbid that I should say that even *one* of them is *willfully* bad. Sometimes there is talk about dismissing one for bad conduct. When I hear of it I almost always beg to have the job put into my hands. But Ernest says (at least lately), with one of his comical looks, that whenever they are turned over to "father" he always keeps them awhile longer, and they never get dismissed at all. Well, I am glad that it is so. There are some here who have tried me most sorely in years past; but as we kind o' kept together I learned to know them better, and they learned to know me better—yes, and I found some redeeming traits—sometimes *valuable* traits—in those I had trouble in getting along with. Some of those I used to dislike I now *love* to see, and I like to be along with them. Dear friend, as *you* grow older do you get along with people *better* than you used to do? Is the spirit "of Christ graced with meekness" finding a permanent lodging-place in your make-up? If so, rejoice and be glad.

Sometimes people are contrary, and sometimes *you* are contrary. I take the liberty of saying this, for I am contrary myself if I do not look out. I have sometimes prayed most earnestly, "O Lord, my great helper and my best friend! Give me grace, and give me of thy Holy Spirit that I may be very careful about the *contrary* spirit that sometimes creeps in upon *me* unawares. I need help and deliverance in this, O Lord; for how can I expect others to put away the contrary spirit while it has a lodging-place in my own heart?"*

Sometimes very capable and in other respects lovable people get contrary because they can not have their own way. None of us can have our own way in this world. You may think that, because I am the senior member of this company, I certainly can have my own way in almost every thing. But it is not true. I am not very much troubled about having my own way with the other members of The A. I. Root Co.; but I am more troubled because some of the helpers absolutely will *not* do as I want them to. Do they know what I want? Yes, I am sure they do; and they put on an appearance of doing just as I say, but they beat me and get out ahead. I have almost given up sometimes, for they have apparently whipped me out. Now, the very ones I have in mind while I am saying this would be astonished if I should say, "I mean *you*." I do not suppose they are *really aware* that they are planning and plotting *not* to do things as I want them done. I do not believe they realize it. The contrary spirit has got into their hearts, and they actually do not know how they are hurting my feelings and really spoiling their own money value. Most of Satan's work is done by persuading his victim that he is doing the right thing. Jesus once breathed a strange prayer: "Father, forgive them; they know not what they do." Of late I have thought this same thing of some of these friends of mine. I ought to forgive them—at least to a certain extent, just as Jesus forgave and prayed for his enemies, because they certainly do *not* realize how wickedly they are doing.

But shall we let people go on being conrary? Shall the soldiers in Bermuda let the boys stone them? No, no! The one who wrote the article in the paper told the boys they would be dealt with according to law if they persisted in their rudeness. Well, I expect these friends of mine to get over being contrary. In fact, if they do not they will suffer. How? Why, pretty soon, when our board meets, the matter will come up, and it will be remarked that such a one is not worth what he is getting, because he is not working for the best interests of the business. If he can be told this in a quiet way—one that will not provoke him to be *more* contrary or to throw up his job when he needs the place and we need the man—then we are all right; and my principal thought in this talk to-day was how best to handle such a case. Suppose you have a hired man, and he is tiptop every way except that he is up so much nights, and out so late, that he can not properly attend to his work daytimes. Turn him off? No, no! not just yet, anyway. Choose a proper time and place, and broach the subject gently. Now remember our text. Do not say *all* you feel like saying—not the first time, anyway. Bring up the matter very gently. State it mildly. Tell about a *quarter* of the state of affairs as they appear to you. You can tell another quarter the next time. When you have told about a half of the trouble he has made by his bad habits or habit, whatever it may be, and it does not do any good, the third time tell him the third quarter. If three-fourths of the whole truth does not answer, perhaps you had better never tell the other quarter at all. If you must part, part good friends.

I know of a man who owed a neighbor almost a hundred dollars. It was not outlawed, because he kept on saying he would pay it. Well, he finally did pay it, and got a receipt in full, but he did not pay the whole amount. He paid only about a quarter or a third. His good neighbor pleasantly agreed to throw off the rest in order to have it settled up. Well, I supposed they were going to be good friends after that; but the man who got the receipt in full by paying only a small part of the debt was tempted by Satan—I guess it was Satan—in some way or other to say some hard and unkind words to the neighbor who had been so patient with him so long. I presume he will excuse himself for saying those unkind words by saying, "It is the truth." Oh dear! what a poor excuse for saying unkind things, because — *they are true!* Why, my good friend, because they *are* true is one of the best reasons in the world why you *should not* wound the feelings of your neighbor by saying things.

Now, my dear friend, if you are having difficulty in getting along with your hired man or your helper in the household, or your washwoman, or with anybody else, do not, I beg of you, be in haste to dissolve the relations that may have been standing for many years. These friends who have been long with you know what you want ever so much better than anybody else. You know *them* in the same way. By years of close relationship you have got fitted to each other's ways. Do not be in haste to quit, and do not be in haste to turn off your old "standbys." *Pray* for each other. If one of you two is not a praying man or woman, then let the other pray the more. Oh how much better one feels when he has accomplished what he wished, without a quarrel! I wonder if there is any need of my adding that sometimes it seems as if a quarrel could not be avoided. If this is indeed true, let it be a *little* quarrel. In fact, every few days something will happen that makes it very desirable to fix things up again. In view of this, please remember, "Least said, soonest mended." It is springtime now, and most of us want help for the spring work, and lots of people want places to work. Is it not lucky that the two wants can be filled so nicely? When you hire a man you kill two birds with one stone—that is, if you do it with love toward him in your heart; and when you get this man to do just what you want him to do, without even a little quarrel, you are killing a great many birds with one stone. It is very bad to change helpers. Ask the gardener how he likes to keep a man long enough to help him plant all his stuff, and then have trouble with him, and let him go before any thing has come up. When I was a small boy I studied shorthand. One day I puzzled my brain several long hours to read a communication in shorthand. When I got it out I was so happy I think I shall always remember it. The words were these:

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* Since the above was dictated, it has occurred to me that David once breathed a similar prayer—"Create in me a clean heart, O God, and renew a right spirit within me. . . . Then will I teach transgressors thy ways, and sinners shall be converted unto thee." How beautifully, and how sharply and clearly the meaning of the above comes out, after having yourself passed through an experience of this kind!

Deal gently with the erring;
You may not know the power
With which the dark temptation came
In some unguarded hour.

HIGH PRESSURE GARDENING BY A. I. ROOT.

GROWING ONIONS ON THE ISLAND OF BERMUDA.

As I have said before, all the onions used, so far as I can learn, are raised by setting the plants when they are of the proper size, say the size of a slate-pencil or lead-pencil. The plants are raised very much as we raise them here. The seed is sown quite thickly in drills, say from 12 to 20 seeds to the inch of drill, the seeds being pretty well scattered, so the plants do not crowd each other too closely. Of course, the ground for the seed-bed needs to be very rich. As there are never any frosts in Bermuda, there is never any occasion for using sash. I think, however, that a covering of cotton cloth would be, many times, a great benefit in keeping off the cold winds. About the only damage their crops receive from the weather is from high winds, especially when the winds are cold. I believe they sometimes have hail—that is, such as we have during a thunderstorm.

The ground is prepared for transplanting the onions just the same as for potatoes; but the surface is raked over so as to have it fine and smooth. I found Messrs. Brown and Adams, at Devonshire, using a home-made marker to mark out the ground for onions. This marker seems to be so much of a labor-saver in getting just exactly so many onions on the ground, and no more, that we give a cut of it.

The apparatus I saw was a home-made one. There are six wooden wheels. These wheels are very much like the bottom of a wooden pail. In fact, if you will get six pail-bottoms (each made of a single piece of wood), they will be just about what you want. These wooden wheels should be sharp on their edges, so that, as they go into the dirt, they make a V-shaped groove. There is a hole bored exactly in the center of each, through which to put some kind of shaft, say a broom-handle or hoe-handle. After the wheels are bored, put them up tight together, and fasten them in some way, say with a large-sized bolt, so you can screw them up tight; then put the wheels in a vise, and with a saw, mallet, and chisel, cut down through the whole six so that each one will be like Fig. 1. The slots cut down in each wheel are for slipping in a piece of wood about like a common plasterer's lath, each one of these strips of wood being sharpened on each outside edge, so as to make a V-shaped groove in the ground. Now put your wheels on the shaft, spacing them so as to stand about 8 inches apart. Now crowd your sharpened strips into the slot each one sharp edge outward. The slots in the wheels should be just right to bring the strips 4 inches apart. This will make your onions stand 4 inches apart in the rows, and rows 8 inches apart—pretty close planting, you may say, but you want the ground rich enough so the onions will almost crowd each other out of the ground.

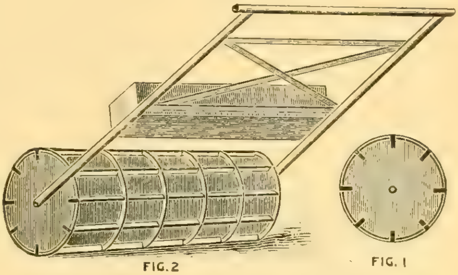


FIG. 2 FIG. 1

MACHINE FOR MARKING THE GROUND FOR TRANSPLANTING.

To use the machine, stretch a line on one side of your ground, say about 4 feet from the outside of your piece of ground. Now run your machine, wheelbarrow fashion, so that the outside wheel just clears the line, the operator at the same time walking on the opposite side of the garden-line. If your ground is not soft enough so your machine will sink to the right depth by its own weight, load it down with stones placed in the box just behind the wheels. The wheels with their strips should sink into the ground so as to make lines lengthwise and crosswise. The planters are to put an onion wherever the lines cross each other. These marks can be much more readily seen than wooden pegs that are sometimes put in such markers. In transplanting, the boys walk in the path made by the man who runs the wheel. All the planting, cultivating, and every thing, is done while standing in this path. The path is rather less than a foot wide—I presume because the ground is so high-priced and valuable.

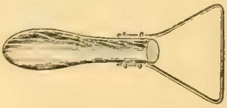
The wooden frame that makes the handle of the machine is made of strips of board, sawed pieces say 1x2 in., perhaps 4 ft. long; then a round stick, say something like a hoe-handle, put in the top to hold it by, and strips put across to brace and strengthen the frame. To have the machine push easy you might drive a round piece of steel in the shaft at each end. Any man who can handle a saw, mallet, and chisel, and hammer and nails, could make such a marking-machine in a few hours. Of course, you can have it to space the plants any desired distance apart just as you like. I have given about the distance apart they plant them in Bermuda.

I happened to be present when there were three or four boys and two men getting the ground ready. I think they had about a barrel of onion-plants. The Bermuda people never trim off the roots or tops. They say they like them better just as they are dug. The man who made the marker took it in hand and ran it along the line with rapid strides—one of the boys who was planting, moving the opposite end of the line for him as fast as he had made a row. The whole piece of ground was nicely marked in a little time. One of the other men, who knew about how many onions would be needed, walked along the path, dropping the onions in little bunches to the right and left; then the transplanters got down to their work. A bundle of plants is taken in the left hand. With the right he picks up an onion-plant, places his forefinger on the bulb, then he sticks the onion, forefinger and all, down into the soft dirt. With his fingers he gives the dirt a little flirt over the roots; then another and another, as rapidly as a compositor in a printing-office picks up his types. The machine marks six rows, so the man in the path plants three rows as he walks along, and three as he comes back on the other side of the bed. I have seen quick gardeners at work in different parts of the United States; but I never saw men or boys anywhere who could come up to the Bermuda onion-transplanters. I suppose one reason for it is, it is their almost daily occupation, at least for a good many of them, for several weeks or perhaps months.

I thought at first the work was done carelessly. It did not seem to me that the onions were down deep enough, and some of the long roots were left sticking up out of the ground. If done on our own soil I should have said that, unless rain came immediately, and in abundance, half of the plants might die; but with the damp sea air constantly blowing in from off the water, nothing dies in Bermuda unless it gets the blight. The onion-plant will grow, even if it does not rain for a week after planting. If the sun is shining all the time they are planting, they will look considerably lopped down the first afternoon. The next day, if it is clear and bright, they will lop down under the influence of the sun a little; but about the third day they will stand up straight, and keep straight.

They do not use any Breed weeders — at least not as yet—and they do not meddle with the onions, so far as I could learn, in any way until the weeds are big enough to pull and throw into the paths.

The most troublesome weed they have is what I should call a beautiful little flower. I believe most of the weeding is done by hand. I noticed our next-door neighbor, Mr. Webb, had what he called wire weeders. It is just a loop of wire stapled to a short handle of wood. Suppose you take an ordinary tool-handle, such as we have on files, for instance. Instead of boring a hole through the handle, as we do for a file, just bend a piece of wire as shown in the cut below, and staple the loose ends with poultry netting staples to the sides of the wooden handle.



MR. WEBB'S WIRE WEEDER.

This weeder pulls the weeds out by the roots instead of cutting them off, and mellows the soil by breaking the crust, or what little there may be around the onions. The weeds are cleaned out of the onion-beds, and dropped in the paths. Sometimes they lie there and stay there till they take root again. I was going to remonstrate against this slovenly way, as it seemed to me; but when they got ready, a smart colored man, with a fork just a little narrower than the path, went along rapidly and spaded every weed out of sight. After every spadeful, with a flirting motion of his fork he made the soil fine and level. When this was done, potatoes were planted right along through the path. The potatoes were put in so that they will come on about the time the onions have covered the ground so as to crowd out the weeds. After the onions are pulled, melons are planted between the paths. I do not know how many onions they get per acre, but I think it is something like 1000 bushels when every thing goes well. The onions come into the United States markets just when our old onions are all cleaned up, and before any new ones are ready. Not only this but it is claimed that the Bermuda onions have an established reputation for *quality*. They are all sound and firm, nice and clean, and mild compared with many of the home-grown onions. The fertilizer is stable manure, seaweed, and last, but not least, different brands of American fertilizers.

While over at my neighbor's, Mr. Webb's, I saw a large patch of onions of most beautifully rank luxuriance. The thrifty dark-green color indicated that they were heavily fertilized with something that suited them. I found this was a special manure purchased of Bowker.* Now, almost in the center of this rank luxuriance there was a little square spot of onions very much inferior; and this spot was defined by sharp straight lines. In fact, the rank strong-growing ones actually lopped over on three sides of this little square.

"Why, Mr. Webb, what is the matter with

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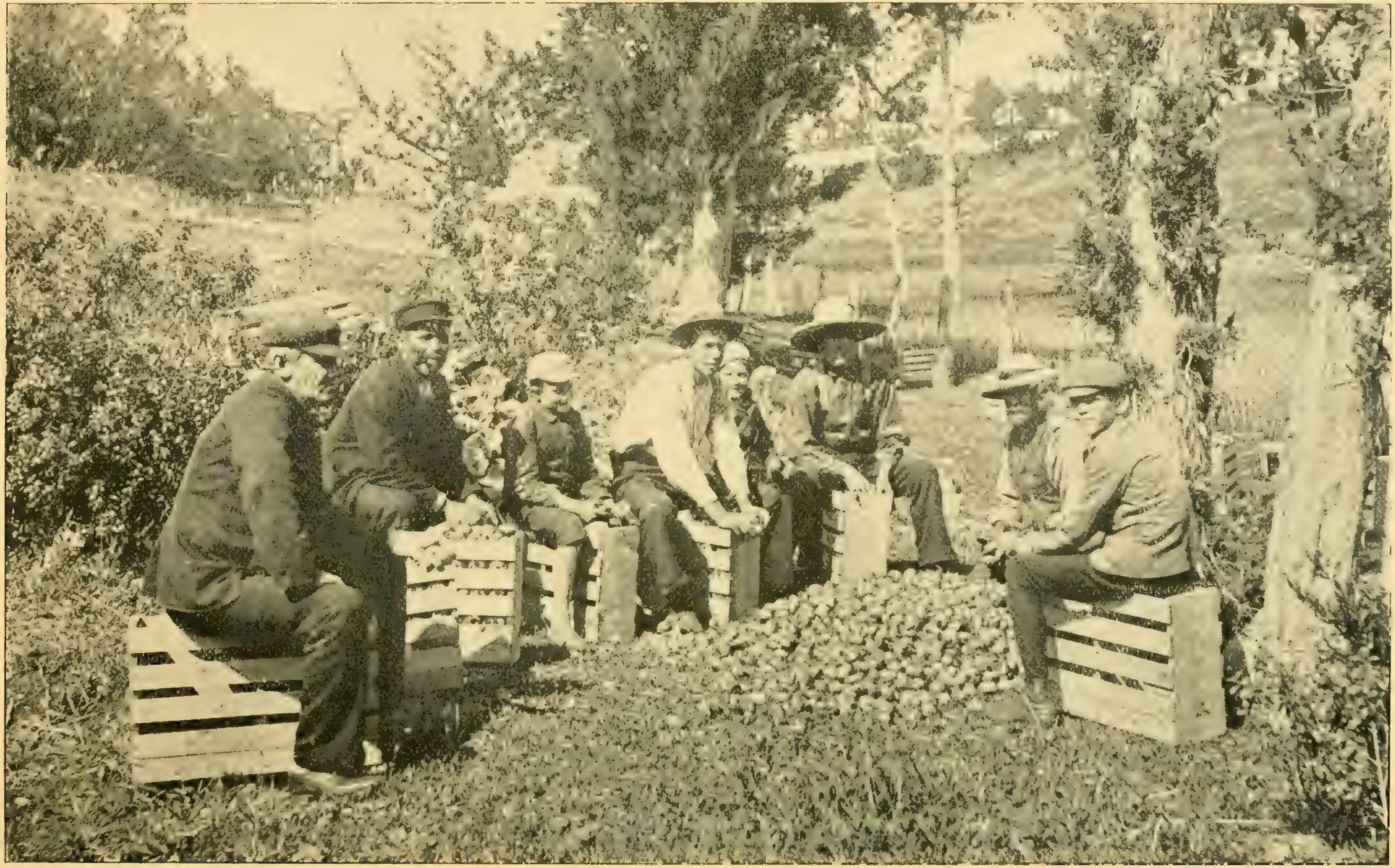
* Made by the Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.



SORTING AND CRATING ONIONS FOR THE MARKET, IN BERMUDA.

that square piece right in the side of your field?"

"Why, that poor place there is where I grew my onion-plants, and this ought to be the richest ground of the lot; but I did not have enough fertilizer to go over that little spot; as it had been heavily fertilized when the plants were started, I concluded it would be as rich as the rest, anyway; but it did not get any fertilizer at the time we gave it to the large bed while cultivating them. It was planted just a *little* later than the others, but that should not make the difference in color."

This little object-lesson illustrates clearly that, at least in Bermuda, it pays to apply a chemical fertilizer during the operation of cultivating, when onions are partly grown.

After the weeds are out they scatter the fertilizer among the rows until the ground is pretty well covered, or colored, you might say, with the fertilizer. It makes the whole surface of the ground look blue, in fact, or whatever color the fertilizer may be. After it is scattered it is stirred into the soil between the rows; then, when the rains come, the onions have plenty of just the food they like right where they want it, and at just the time they need it most.

They are having a good deal of trouble with the onion-blight, and they are trying the Bordeaux mixture, copperas solution, and various other chemicals. As with the potatoes, sometimes they seem to succeed, and at other times they do not. In gathering the crop, only the finest are put in crates for shipment. Seconds, I believe, are mostly sold out and consumed on the island. They have some trouble with the scullions; but I believe they make no use of these—they are just thrown into the compost-heap.

The business of selling onions bunched up is almost unknown in Bermuda, and they think it will not pay to ship to the United States, because they are perishable, and the market is so far off.

We submit a picture of an onion-field where they are sorting onions and crating them for the markets. Timber is so scarce in Bermuda that crating-material is all brought from New York or from Nova Scotia. I believe freights on lumber and such material are quite low, however, so the crates do not cost very much more than they do here.

Let me say, in conclusion, that I know of no prettier sight than a whole family busy at work near their home, among the potatoes and onions. The people seem to be contented, industrious, well dressed, and nice looking. They have pretty dooryards, gardens, flowers, and, with their neat stone houses, it makes a picture of thrift and industry that we rarely see anywhere else.

GARDENING FOR APRIL 1.

Well, if you have not put in your first peas, do so at once—some Alaskas, anyway. Some of the sugar peas are a little more apt to rot in cold weather, but you might put in a few. Then you want to get in your onion-seed as soon as possible. Onions do better during cool wet weather, and the frost does not hurt them, or very rarely hurts them, after they are up. Onion-sets of every description should go in at once. If you try to keep them out of the ground they are very apt to sprout; and if you want to plant old onions to get top sets, get them in also.

Lettuce and radishes can also be sown now in the open ground; parsnips and vegetable oysters as soon as you can get the ground in good order. Spinach had better be sown in the fall; but if it was not done, get it into the ground in the spring as early as possible. If you are dilatory, and the hot weather catches it, it will shoot up to seed, and not do much good. If you want to plant pie-plant roots, asparagus-roots, horseradish, or any thing of that sort, get them in as soon as possible, no matter what the weather is, if it is not too wet. Onion-plants grown in the greenhouse can not be put out quite as early as onion-*sets* and onion *seed*—that is, unless they have been well hardened off. You see, the shock is too great, and hardly any plant will succeed if much of a frost catches it just after it has been transplanted from under glass. Now is an excellent time to set strawberry-plants.

You had better get out a few extra early potatoes; and you might put them out on the Bermuda plan, given in our last issue.

Every season brings surprises; and the surprise just now is to find every thing almost a month ahead of what it usually is. The grass has made a fine start; wheat is looking splendidly; peach-trees are loaded with buds ready to blossom; soft maple has been giving honey for a week or two past when it did not rain so the bees could not fly. Pie-plant in the open air is almost ready to gather. Fruit-trees, apples, and almost every thing else, are showing the green leaf-buds, and no wonder; for there has been scarcely any frost or freeze since the middle of March. I gather by correspondence that this state of affairs is general almost all over the United States. Now, if Hicks had only said in his almanac that the latter half of the month of March would be just like what we usually have in the latter half of April, what a boom it would have given him! On the contrary, he puts out only vague hints of storms and terrible cold waves that will catch the farmer unawares without having his stables battened, etc.

Had it not been for the excessive rainfall we might have made quite a little garden. In fact, we did get out between showers to put in Alaska and American Wonder peas, which are now up bright and green. I wanted to get out our onion seed and sets, especially the latter; but the excessive wet made it out of the question, even on the most thoroughly drained soil. Crimson clover is just a green mat all over the ground, and I do not think the frost could pull it out by the roots, even if it tried ever so hard. Judging from the seed trade there will probably be a vast amount of gardening just as soon as the wetness is over. During the last two weeks it has been a problem to so arrange at least a little piece of ground that it can be worked in spite of the wet. A side hill with considerable slope, porous soil, well underdrained, comes the nearest to it. Plant-beds that are raised up so the soil is, say, six inches above the paths, answer the purpose pretty well. We took off all our sashes two weeks ago, stored them under the painted boxes where we keep them in the summer, and the most of them have not been out from under the boxes since. A few times we have covered the tomatoes and other kinds of plants just transplanted.

It should be borne in mind that cabbage, cauliflower, celery, lettuce-plants, and other hardy stuff, need protection from frost almost as much as tomatoes, when they are first transplanted out in the open air. After they have got rooted and to growing, you can gradually harden them off so they will stand a frost that will freeze the ground hard enough to bear up a person. It is rather better, however, to have glass over them whenever the ground freezes.

To-day is March 25. Last night we had the hardest freeze in the past two weeks. In fact, the muddy roads were almost hard enough to hold up a man's weight; but I do not think it has hurt the strawberry-plants materially by lifting them out.

Our buffalo-berry bushes were just loaded with bloom; and in order not to lose the fruit again we covered them with cotton sheets, the kind we use for spreading over our wagons when we gather seeds. Our early strawberries under glass are now loaded with fruit. Of course, we cover them whenever there is a frosty night. I am watching every day to see runners start, so that we can have potted plants as early in the spring as possible.

SWEET CLOVER ONCE MORE.

We copy the following from the *Agricultural Epitomist* for January :

> At the North, *Melilotus alba* is considered a weed and a pest—not looked upon with any degree of favor except as a valuable plant for bee pasture. In the South, it is one of the most valuable fertilizing and hay plants we have; also highly appreciated for its early spring and late fall pasturage. Stock are not fond of the plant at first, but soon acquire a taste for it. For dairy cows the hay is specially valuable, very largely increasing the flow of milk and the yield of butter, improving the quality of both, in fact. None of the clovers are superior to it as a fertilizer. It grows satisfactorily only on land well supplied with lime. It is distinctively a lime plant, and if there is but a very small per cent of lime in the soil it will not thrive well, and we advise against sowing on such lands. On our lime prairie soils of East Mississippi and Central Alabama this plant is largely grown. It thrives admirably with Johnson grass—in fact, the two supplement each other nicely. The strong, deep-penetrating roots of the melilotus loosen up the hard subsoil and enable the Johnson grass to grow off to better advantage.
>
> It matters not how severe the drouth or excessive the rainfall, melilotus is a certain crop—a sure crop, independent of any variation of the seasons—a plant that can be depended on.
>
> As a fertilizing crop, it can not be excelled, if equaled, by any of the leguminous soil-recuperating plants. On soils where the highest limit of corn production did not exceed eight bushels per acre, a few years of melilotus-growing on the land so enriched the soil that thirty bushels of corn per acre was easily raised.
>
> Melilotus is a biennial, and reseeds itself every two years It stands cold as well as alfalfa and red clover.
>
> We have no seed for sale. We have no personal motive in speaking so highly of the merits of this plant. Recognizing these merits that characterize this plant, having personally witnessed the practical values of the plant on our own farm as a fertilizer, hay, and pasture plant, we feel in a humor to do it justice by giving greater publicity to its virtues.
>
> Is it not strange that a plant that has proven itself so meritorious at the South, and growing steadily and continuously in favor here, has no friend in the North to sing its praises or accord it any worth whatever, save the apiarist—the owner and lover of the honey-bee ? EDWIN MONTGOMERY.
>
> Starkville, Miss.

Please notice the writer is not a bee-keeper, does not sell seed, and has no interest in any shape in the matter. I would call special attention to what he says about its value in the South, and I want to add that we very much doubt whether there is a place in the North where cows can not be taught to eat sweet clover when it is pastured or cut at the right stage of growth. I am sure there is not a locality anywhere where it will not prove to be one of the best plants known to enrich impoverished soil by plowing it under. Our experiment stations are pronounced in its favor wherever a test has been made. Since the matter has been suggested in regard to *lime* for its best growth, I am inclined to think our friend is right about it. This thing, at least, is true : It will grow on ground so poor that no other plant can be made to make a stand. In fact, it grows with rank luxuriance on soil thrown out from deep railroad cuts ; and such land can be made productive by plowing under a heavy growth of sweet clover, without adding any thing else ; and, astonishing as it may seem, where the ground is rich, and will grow all sorts of weeds, we oftentimes fail to get a good stand of sweet clover.

PRIZETAKER ONION-SETS GOOD KEEPERS.

I learn from a neighbor that his Prizetaker sets have also kept well (unfortunately he has none for sale), and that the green Prizetaker grown from sets makes a very salable bunch onion. T. GREINER.

La Salle, N. Y., March 21.

I am very glad to know that somebody else has made the same discovery I have. Now, friends, here is the point : Sow a lot of Prizetaker onion seed in a broad drill. Put them in very thickly. Get them in just as soon as the ground can be worked nicely ; then put up a notice in your dooryard, "Prizetaker onion-plants for sale—15 cts. per 100; $1.00 per 1000." Sell all you can, just before it is time to transplant; let the rest grow. If they are planted thickly enough they will make nice onion-sets which ought to sell readily at $1.00 a peck. If your ground is very rich, and they grow too large for sets, sell the largest ones for table use, medium size for pickles. The great nuisance with all kinds of onion-sets is the tendency to sprout before people get ready to make garden—especially tardy people. I confess I am a little surprised that the *sets* keep so well when the Prizetaker onion itself is not, as a rule, a good onion to keep over.

ACORN ONION-SETS, ETC.

What you say in GLEANINGS, March 15, about the acorn onion-sets (taking up the parent onions in the fall and planting them again in the spring year after year for sets) will do for some three or four years; but after that new bottoms ought to be planted, or else they become too much exhausted to produce fine onions. M. D. WENGER.

Elkhart, Ind., March 21.

TOP ONION-SETS.

As long ago as when I was a lad, our people raised these same "top onion-sets," and for keeping qualities and firmness I have never found their equal; and if grown in a favorable season they are very crisp and sweet-flavored. In a very dry season they will grow very slowly, and be strong, and small in size. This is true of any onion, so far as my experience goes. It has been my custom to raise from one peck to 12 bushels of these sets every year for the last 25 years. There is always a local demand for these sets in our section, and they are staple goods. The principal use is for green onions before others mature.

Kirkwood, N. Y. C. G. MARSH.

COFFEE BEANS.

I have raised several kinds of coffee beans, and wish to say that, besides using them for coffee, we cook them as we do other beans, and find them very palatable; and as for nutriment, they have but few equals. They also make some of the richest kind of meal for a cow giving milk, and are very useful to feed hens as egg-producers. I have none for sale.

Hendersonville, N. C. J. L. HUBBARD.

I am glad to get the above, for I have for a long time felt that the coffee beans were valuable for many purposes besides coffee. They will grow on any soil, and with any sort of a chance will make a tremendous yield. The plant is as valuable as any of the clovers for improving the ground. Let us have them raised in such quantities that they can be sold as cheaply as the navy beans.

SWEET-POTATO CULTURE—GROWING THE PLANTS.

Making the plant-bed usually begins about the first of April in Southern Ohio; farther South it should be earlier; north, later. The bed that is easiest for the novice is the "manure bed." This can be made by setting the frame on top of the heating manure, or by digging a pit a foot deep, dumping in the manure, and setting the frame over this. In either case it is necessary that the manure should "*heat up*" before putting on the dirt. If you wish the bed to hold heat a long time it is better to use two feet of straw in the bottom and the manure on top of this. Be sure to tramp it down well before putting on the dirt, which should be about 3 in. deep, and not packed. Also provide drainage. If this should be neglected you may awake some morning and find your bed filled with water. This would cause a rapid cooling of the manure. After making the bed, place a thermometer in the dirt; cover it with boards or cotton cloth (you will not need sash for this bed), and allow the temperature to run down to 90° before bedding the potatoes; 100° will not hurt the potatoes if you have properly tempered them before bedding. If you depend upon buying your potatoes, keep them in a warm corner by the kitchen stove at least a week; they will have become acclimated by that time, and the high temperature of the hot-bed will not cause so many to rot. I have seen many beds burn up the potatoes because they were too cold, and the change in temperature was too sudden. Before bedding my potatoes I usually run the temperature up to 90° a week before taking them from the cellar.

With bottom heat, be careful that the potatoes do not touch each other, and do not cut the large ones. Cover the potatoes with 4 inches of fine sifted loam or sand. I believe I prefer a mixture of well-rotted manure, fine garden soil, and wood ashes run through a sieve with a ¾-inch mesh. I know many will object to covering the potatoes so deep, but I am sure they will root better in 4 inches of soil than in 2 inches.

Never water till the sprouts are well through, and then water in the morning on bright days. Watering in cloudy weather or late in the evening often causes the plants to take stem rot.

If you are going to raise enough plants for an acre of ground, and have enough to supply your neighbors also, you will find the manure-bed too laborious. Some three years ago I planned to heat a bed by blowing steam into tiles Just as I was ready to bed my potatoes my boiler sprang a leak, and I put in the potatoes without any bottom heat whatever. In following this plan I find it is necessary to start the potatoes in the cellar by running the temperature up to 90° some two weeks before bedding; have the frames well protected on the sides, and leave the sash on till the sprouts are well through the ground. In this form of bed the potatoes can lie close together; in fact, I carry them from the cellar and dump them, spreading them with my hands. Do not ventilate during the warm days, even if the temperature should run up to 110°. Let the first few sprouts that appear burn; it will not damage them much; they will soon regain their vigor when the bed is ventilated. Just as soon as the sprouts begin to show over two thirds of the bed, then it is time to give ventilation, and soon the sash can be left off during night and day but must always be put on whenever there is any indication of frost. The sweet-potato plant will not stand freezing, no matter how much they have been hardened. The same rule for watering will apply for this form of bed also.

The plants will not come up so evenly in this form of bed, and the first year I clipped them off whenever they grew over four inches high; but this seemed to stunt the plants so much that I thought of another plan which I find to be very successful. Whenever the plants reach 4 or 6 in. in height I pull them and heel them in good rich mellow soil, where they can get plenty of sunshine, and about 25 to the foot.

I dig a shallow trench with a spade or mason's trowel, then take a handful of plants in my left hand, and, by the aid of my right, just spread them along in the row, pushing the dirt against them so they will stand straight, making the rows 10 inches apart. I water them the same as the beds; they must not be watered on cloudy days, and they must be protected from rain. If you are not cautious about this you will find them growing with the stem rot some day when you are least expecting it.

By following this plan you will be able to get five or six pullings from a bed. Every time you pull the plants that are ready it gives the remaining ones a much better chance. You will also find these transplanted plants ever so much better than those just taken from the bed, and you will get almost double the amount of plants also.

This method of transplanting plants will serve just as well for other plants, especially those that have come from a distance. I never set plants in a field that are shipped to me, unless the weather is very favorable. Heel them in and wait till they start to growing, which will be shown by the little white rootlets making a fresh start.

I neglected to say that one must not stamp the manure with the feet, but must take a board the width of the bed and walk across, stepping off, turning over, and walking back, repeating this till the bed is finished, then put on the dirt. J. Q. MULFORD.

Lebanon, Ohio.

Concluded in next issue.

PILGRIM SONG.

BY REV. NORMAN PLASS.

We, as pilgrims of a day,
Only once can pass this way;
Therefore let us not delay.

Any good we can bestow
As we on our journey go,
That will prove a boon indeed,
Let's bestow it.

Any kindness we can show
That will ease another's woe
And his hungry spirit feed,
Let us show it.

Any luster we can throw,
Others' paths to set aglow
And their feet to glory speed,
Let us throw it.

Let us not defer, neglect;
God-sent moments we reject
When our time we select.

Let us fill each moment, then,
Full of fragrant gifts to men;
We'll not pass this way again.

DANZENBAKER'S BOOK.

I have had Danzenbaker's "Facts about Bees" a long time, but never took particular time to read it thoroughly, nor see how very practical it is, till yesterday. I read it through, and, without any exaggeration at all, I positively think it the best and most common-sense and practical little book I ever read, and I have been reading beeology for the last 25 years.

Kingston, N. Y., Feb. 24. AARON SNYDER.

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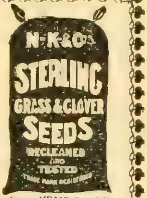

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Honey Column.

CITY MARKETS.

MILWAUKEE.—Since our last report a good demand has prevailed for honey, especially for sections, and the market prices fairly maintained for the *best* grades, and our stock of this kind has been perceptibly reduced, which shows the good taste of our customers. The supply continues fair; but, if the present demand continues, will not hold out till another crop. Extracted not selling as lively, although our sales have been encouraged, and result well for our customers and shippers. We will continue to quote fancy 1-lb. sections at 11@12—sales mostly at 11; A No. 1 1-lb. sections, 10@11—sales mostly at 11; No. 1 1-lb. sections, 9@10—sales mostly at 9; 1-lb. sections amber, 8@9; 1-lb. sections dark, 7@8; extracted white in barrels and cans, 5½@6; extracted dark or amber, 5@5½; beeswax, 26@28.
A. V. BISHOP & Co.,
April 8. Milwaukee, Wis.

CHICAGO.—Fancy white comb, 10@11; No. 1, 9@10; No. 2, 8½@9; amber, 7@8; water white extracted, California, 5½@6; amber, light, extracted, California, 4½@5; amber, dark, 4@4½; beeswax, 25@27; market steady.
AMERICAN BROKERAGE CO.
April 8. Chicago, Ill.

MINNEAPOLIS.—Fancy white-clover comb in good demand. No change in prices.
S. H. HALL & Co.,
April 9. Minneapolis, Minn.

NEW YORK.—Our stock of comb honey is well cleaned up. There is yet some demand for choice white and buckwheat comb, and quite a few lots have arrived lately. We quote fancy white, 10; off grades, 8@9; buckwheat and mixed, 6. Extracted is dull at present mainly so for white clover and buckwheat, while California and Southern is in fair demand. Prices are unchanged. There is a good market for beeswax at from 26@28 according to quality.
HILDRETH BROS. & SEGELKEN,
April 9. 120-122 W. Broadway, New York.

COLUMBUS.—Fancy white, 11; No. 1, 10; amber, 8.
THE COLUMBUS COMMISSION & STORAGE CO.,
April 11. 409-413 N. High St., Columbus, O.

KANSAS CITY.—The demand for comb honey is only fair. We quote fancy white comb, 9@10; No. 1 white, 9; amber, 8@9; extracted white, 5@5½; amber, 4½@5; dark, 4; beeswax, 20@22.
C. C. CLEMONS & CO.
April 9. Kansas City, Mo.

DETROIT.—Fancy white comb honey, 11; No. 1 white, 9@10; fancy dark, 7@8; No. 1 dark, 6@7; extracted white, 5@6; dark, 4@5; beeswax in good demand at 27@28.
M. H. HUNT,
April 11. Bell Branch, Mich.

CLEVELAND.—We quote our honey market as follows: Fancy white, 12@13; No. 1 white, 11@12; fancy amber, 9@10; No. 1 amber, 8@9; fancy dark, 7@8; white extracted, 6½; amber, 5½@6; beeswax, 26.
A. B. WILLIAMS & CO.,
March 31. 80-82 Broadway, Cleveland, Ohio.

CHICAGO.—Sales are now of small volume in this market. The spring products, such as maple syrup and sugar, are displacing honey. Prices are nominally unchanged from last quotations, but there is practically no first grade of comb here. Extracted honey quiet. Beeswax active at 27.
R. A. BURNETT & CO.,
April 8. 163 South Water St., Chicago, Ill.

CINCINNATI.—Nothing new in the market. Demand is slow for comb honey at 10@13 for best white, while demand is fair for extracted at 3½@6, according to quality. Beeswax is in good demand at 20@25 for good to choice yellow.
CHAS. F. MUTH & SON,
April 11. Cincinnati, O.

ST. LOUIS.—Our market seems to be overstocked with honey. All of our dealers and manufacturers laid in large stocks last fall. For the past few months we have been canvassing the trade, trying to unload our stock. The majority of the trade say we have more stock on hand than we want, and that price is no inducement to buy. We quote market nominal, same as last.
WESTCOTT COM. CO.
April 9. St. Louis, Mo.

PHILADELPHIA.—The recent warm weather has stopped the sale of honey; very little call for comb honey; only moderate call for extracted; beeswax in big demand. We quote No. 1 comb, white, 10; amber, 9; extracted white, 5½; amber, 5; dark, 4; beeswax, 27. We are producers of honey, and do not sell on commission.
WM. A. SELSER,
April 11. 10 Vine St., Philadelphia, Pa.

BOSTON.—We quote our market: Fancy No. 1, in cartons, 13; No. 1 white, 11@12; No. 1 light amber, 9@10. Supply is light; demand good. Beeswax wanted.
BLAKE, SCOTT & LEE,
April 8. Boston, Mass.

FOR SALE.—Cheap, 5 bbls of honey.
CHAS. DADANT & SON, Hamilton, Ill.

FOR SALE.—White-clover and buckwheat honey. Send for samples and prices. I think that I can please you. M. W. HARRINGTON, Williamsburg, Ia.

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THE APRIL REVIEW.

The editor of the Bee-keepers' Review believes that he has never gotten out a finer or more interesting issue than that for April. Here are a few of the points:

Sweet Clover receives considerable attention in this issue. Its value as a forage and honey plant, especially in times of drouth, is described by those who have had experience; and Mr. Baldridge explains *why* it sometimes fails to grow; points out the remedy, and gives the philosophy of the manner in which it enriches the soil.

One Editorial has for its heading "How to Make Money Producing Honey;" and, while it may not prove so startling to some as its title would indicate, the ideas there advanced may induce some to so change their plans as to lead them on to fortune.

Typographical Beauty, and its influence upon the reader is, the subject of an article by Mr. E. A. Daggitt; in which, among other things, the beauties of the Review, as it is now published, are held up in such a manner as to bring a flush to the editor's cheek.

Comb Foundation is one of the most important subjects connected with bee-keeping; and Mr. R. L. Taylor has, in the April Review, an article on this subject that no bee-keeper can afford to miss. It is, in a certain sense, the summing up of his series of experiments with different foundations If you use foundation in sections, be *sure* to read this article.

Comb Honey is being robbed of its delicate deliciousness by our modern improvements (?) writes Mr. C. G. Ferris; and then in graphic language he proceeds to tell us *how* and *why*.

Mr. Aspinwall discusses, in a dialog with his friend Mr. Weatherbee, the finer points of the plain section and the section-cleaner; and points out a decided objection to a *disk* for cleaning sections. It must be a *cylinder*, and he tells *why*

The Frontispiece is by far the finest picture of sweet clover that has yet been produced. It is from a photograph, and shows the clover in full bloom; growing as tall as the editor, who stands in an attitude of thoughtful admiration. By the way, his wife says that it is the most natural picture of him that she has ever seen.

Send Ten Cents for a copy of the April Review, and with it will be sent the Dec. issue, and one other back number; and, after seeing these copies, if you wish to subscribe, the ten cents may apply on the subscription. A coupon will be sent entitling you to the Review for 90 cents, if sent during 1898.

W. Z. HUTCHINSON, = = Flint, Mich.

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* * *

WE WANT every reader of *Gleanings* also to read the old *American Bee Journal the balance of 1898*, and we propose to make such a low offer to *new* subscribers that they will all see that they will be the loser if they do not accept it. Just look at this array of departments and see

What The American Bee Journal Contains:

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We have always felt that in this opening department of each number of the AMERICAN BEE JOURNAL we were very fortunate in the variety, character, and experience of its contributors. As you would read it from week to week you would notice that among them are found the very best bee-keepers of this continent.

2. Questions and Answers.

This department is exclusively in the good hands of *Dr. C. C. Miller*, perhaps the best-known bee-keeper in the world. His ripe and long experience is much sought by those who are trying to master the study and work of the bee, and also to make its care profitable. We need only point to the numberless replies Dr. Miller has so kindly given in this department the past five years. All have been helped by his generous and full responses to questions. This department is particularly valuable to beginners.

3. Beedom Boiled Down.

While this portion of the BEE JOURNAL is one of the most interesting and economical to the subscriber, it is also one of the most difficult to prepare. It means the reading of the bee-literature of the world, and then "boiling it down" in a few words, so that when a bee-keeper takes the AMERICAN BEE JOURNAL he has placed before him each week in a nutshell about all of real value that is printed to-day on the subject of bee keeping. This department is a *money-saver* and a *time-saver* to all who are permitted to read it. It saves spending a number of dollars for other bee-papers, and then, of course, it saves much time that would be used in reading them all in order to get what we "boil down" into a few words and space. It is very plain to be seen that "Beedom Boiled Down" is very valuable to the busy bee-keeper, who, at the same time, wishes to know what is being said in the whole bee-keeping world.

4. Convention Proceedings.

The BEE JOURNAL is the only bee-paper in the United States that makes much of an attempt to publish reports of conventions, and especially the reports of the national bee-conventions.

5. Editorial Comment and Weekly Budget.

We simply *mention* these two departments. Editorial modesty forbids our saying more than that we trust they are found interesting as well as helpful. It is our aim to have much variety in them, and especially to note the current apicultural events as they transpire.

6. General Items.

Here we aim to get in the various short reports from the field as fast as sent in by our readers, and also other items of a miscellaneous yet valuable nature.

7. Question Box.

This is a department that has been running in the BEE JOURNAL for over twelve years. More than 1000 questions have in that time been answered by the score or so of the experts who are therein represented. It is a part of this paper that is alike interesting to the oldest and the youngest in the ranks of bee-keepers.

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Every bee-keeper (and especially the beginner with bees) ought to have a bee-book; and in order that you may easily afford to give the Bee Journal a trial, and also have a good text-book on the subject of bee-keeping, we wish to make you a very tempting offer. We have just issued a new edition of the 160-page book called "BEES AND HONEY," that is a most excellent little work, bound in neat paper cover and which retails at 50 cents. But that you may not fail to become acquainted with the Bee Journal, and also own this nice bee-book, we will say that we will mail you the Journal the balance of this year (1898), with the book, **both together for only 60 cents.** We will begin your subscription the week after receiving it, so the sooner you send us the 60 cents the more you will get for it. This makes the Bee Journal cost you, for the remaining 8 months of this year, only 10 cts. Think of it—a good book on bee-keeping and about 40 copies of the American Bee Journal—*All for only 60 cents.* Remember, please, that the above is a *special* introductory price, and is made only as an inducement for you to give the Bee Journal a trial. We need not say that it is a rare bargain—you KNOW it is. Don't forget that you get the Bee Journal EVERY WEEK from the time you subscribe until the end of 1898.

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As explained in former ads., publishers can afford to put forth extra efforts in securing *new* subscribers, as the majority remain, once they become subscribers to a *good* journal. It is from this point of view that I make the following offers :

OFFER NO. 1.

To any one not a subscriber to the Review who will send me $3.00 I will send the Review for 1898, and 1000 strictly first class snow-white one-piece sections. After accepting this offer, if any one wishes to buy more sections I will furnish them at the following prices: 1000 for $2.75; 2000 for $5.25; 3000 for $7.50; 5000 for $12.00. Sections will be shipped from any of the following points : Flint, Mich.; Chicago, Ill.; Medina, Ohio; Jamestown, N. Y.; Higginsville, Mo., or Omaha, Neb.

OFFER NO. 2.

To any one not a subscriber to the Review, who will send me $1.50, I will send the Review one year and a fine TESTED Italian queen. Purchasers may have either the bright golden strain, or the dark leather-colored reared from imported mothers. After accepting this offer, if any one wishes more queens they will be furnished at the following prices: Single queen 90cts.; 3 for $2.65; 6 for $5.00; 12 or more at 75 cts. each. Orders will be filled in rotation, and safe arrival guaranteed.

Unless otherwise ordered, subscriptions will begin with the Jan. issue ; and the Dec., 1897, number will also be sent free. If you are not acquainted with the Review, and wish to see it before subscribing, send ten cents for three late but different issues, and the ten cents may apply on any subscription sent in during 1898.

W. Z. HUTCHINSON, Flint, Mich.

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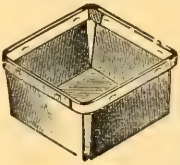

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Smoke Engine (largest smoker made.)	4-inch	stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
Plain	2-in.	"	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

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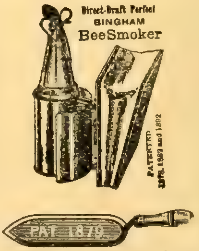
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio.

VOL. XXVI. APR. 15, 1898. NO. 8.

STRAY STRAWS FROM DR. C. C. MILLER

REFINED SUGAR is not so good as honey for spring feeding, says J. B. Hall, *Canadian Bee Journal*, and West India sugar is better than either. Now, what's West India sugar?

DON'T SPRING any more new things on us, Mr. Editor, till we have time to recover breath; 18-foot foundation! Whew! When will you have 9-ft. brood foundation? [In about a month, perhaps.—ED.]

AN ITEM of prime importance with me in carrying out bees I don't find mentioned by Doolittle, p. 262. It is to have the cellar wide open all night before carrying. Then no smoke is needed, and it isn't necessary to fasten bees in hives.

THAT'S A GOOD IDEA of Doolittle's, p. 263, to have a plank covered with wet cloth to stop a deep entrance when carrying out bees. I used to use a wet rag for stopping a shallow entrance, but never thought of a board to help in the deeper entrance.

KILLING OFF OLD BEES in the fall was recommended at Ontario convention by Jacob Alpaugh, and indorsed by J. B. Hall. They think an extra number of bees in winter need extra honey, and the dying of the old bees through the winter helps kill young bees.

H. D. BURRELL'S article, p. 259, makes me think selling honey is easier than I supposed. I've always supposed him a good bee-keeper, but never a salesman. He's one of the quiet kind, so deficient in "cheek" that you can almost see his back teeth through his face.

HUTCHINSON must sit up nights to find such appropriate couplets for his headings, and to arrange his advertising pages. The latter are the prettiest—well, I think I'd better not start another quarrel with the Medina printers till they get cooled down a little over that spelling business.

TO OFFSET your flinging W. F. Marks with his section-holder at me, p. 268, I may mention I've just had a letter from J. L. Anderson, a bee-keeper of 35 years' experience, who has raised tons of honey, and he says, "I have used section-holders and T supers, but I made kindling-wood of the former, and use the latter."

THE PREMIUM, if generous, is the chief thing to work for in exhibiting honey at fairs, says J. H. Martin in *Review*, and the editor says he's right. One Weed show, as given in GLEANINGS, is worth ten exhibits at fairs—so much hurly-burly at fairs, and so much hurry in sight-seeing that little permanent impression is made.

PROF. LEUCKART, whom the older readers will remember as the able German scientist who helped to establish the Dzierzon theory, died in January, aged 74. [It seems to me we Americans should give him more than a passing notice. Who will furnish his biography and his photo? Perhaps friend Gravenhorst, of the *Bienenzeitung*, can do it.—ED.]

EDITOR ABBOTT sharply jerks up a writer in St. Louis *Republic* for saying, among other things, that extracted honey granulates and becomes like sugar in cold weather, and then gives the other fellow a chance to jerk him by saying, "There is just as much difference between granulated honey and sugar as there is between liquid honey and sugar." [Ha, ha! good joke on Abbott.—ED.]

WM. STOLLEY reports in *Busy Bee* that his bees have been trapped and killed by the bushel at a beet-sugar factory, and asks if the Union can help him out. There's probably no help for him with present laws; but if proper efforts were made, laws might be secured obliging such bee-traps to screen out the bees. Bee-keepers, however, are very shy about asking any legal protection.

"THREE MEN, or even one man and two smart boys, can easily go over an apiary of 200 colonies before breakfast, and ascertain just which hives need honey, and exactly how many frames each should be contracted to," says the editor of *American Bee-keeper*. Say, I. S. Tilt, that's worse than my scraping 1200 sections in a day. Now you have a tilt with Hill, and lay him low in some hollow.

APIS DORSATA is cuddled just a little by *American Bee-keeper*. It's none of my funeral, for I don't believe the big Indian bee would live as far north as Illinois; but I think just as I've always thought, that it will be easier to find out whether they can be domesticated without bringing them here, and it will be a mighty mean trick if Uncle Sam or any other man turns them loose on southern bee-keepers till it is first known they can be controlled.

A FEW DAYS AGO I ran out of new separators, and had to clean some old ones. I could make pretty fair wages at it, but still I think I'd rather have new. Then I tried cleaning fences on a very small scale. With my present attainments I know (if you will excuse the audacity of the word) that I can clean plain separators more rapidly than fence, making fences more expensive for me than plain separators in the long run.

THAT STORY on page 263 is good, friend Doolittle; but the question is, whether it applies to you or "the other fellow." A. Bridge says, in April *C. B. J.*, that he used to set out his bees on successive days, but learned it was bad policy, and now sets out all together. The earlier lots would take their cleansing flight, and then be ready to rob those taken out later. He says the bees mix when taken out together, but no harm comes of it.

D. N. RITCHEY says, in *Busy Bee*, that farmers hadn't had a crop of clover seed for 20 years till he moved in and bred his bees to such a size they could work on red clover; and now they get big crops of best seed. Bro. Ritchey and I believe in breeding for long tongues, even if some editors don't. [But some of us have not seen those bees yet with long tongues, notwithstanding all the talk about them. Prove your faith by your works. —ED.]

"IN COMB HONEY, over half of the bee-keepers of our country are trying to economize by using only one super with 24 or 28 sections. Where are the bees going to be storing honey while they are giving the finishing touches to their sections?"—*C. B. J.*, *editorial*. Rightly asked, friend Holtermann; but it doesn't really seem possible such a large proportion of bee-keepers are doing any thing so foolish. I should be surprised if there were one in ten. [So should I.—ED.]

I WAS LYING on the lounge (Mr. Printer, be sure not to put a comma between the third and fourth words) reading GLEANINGS, and when I came to the longest item on p. 267 I had to get up and walk the floor. May be nothing in plain sections without separators, but I'd like to try them. [W. K. Morrison, who put that idea into my head, will have something to say upon this question in an early number of GLEANINGS. I am not sure but there is something in his idea. Well, I will have more to say about it when he puts it in his own words.—ED.]

YOU WANT ME to be consistent, Mr. Editor, p. 248; and by that you evidently want me to make it impossible for any one to be dishonest who handles honey of my raising. I can't undertake such a big contract—much as I can manage to be honest myself. But, say; if I should use 2-inch sections as you suggest, many of them would weigh less than a pound. [Very true. But two-inch sections will average a pound, 4¼ square, nearer than your 1⅞. Say; look here, doctor, if we keep on talking we shall find that, after all our squabble, we are of the same mind on this mooted question. Did you get on my side of the fence or I on yours? Well, I don't care.—ED.]

MY SUB-VENTILATOR got stopped up, and didn't work all winter. But the bees wintered splendidly, less than two in a hundred dying, and those that died were perhaps all queenless. I'm just a bit afraid of the *quality* of air that has traveled under ground. I had no fire all winter. [You have been nearly the only one, doctor, who has advocated the sub-earth ventilator of late. About all the rest seem to have gone back on them. If you have left it because by accident yours got stopped up, and your bees wintered better than usual, it seems to me we have gained a valuable point in experience. Had no fire all winter! Do you mean to imply that the stopping-up of your sub-earth ventilators made it unnecessary? So far as I now recall, you have been about the only one of late who has used fire in the cellar.—ED.]

EDITOR HILL shuts one eye, and looks quizzically at that picture of eight sections, and wonders whether it may not be that the difference was caused, not by difference in sections, but by crowding hard the bees in the plain sections; or, possibly, a difference in comb-building traits of the two colonies. Evidently, the thing to settle the question is to alternate the two kinds of sections in the same super, then something positive will be shown. [It seems to me the question hinges on the point whether Hutchinson picked out a fair lot of either kind of sections as he finds them on the market. Now, then, doctor, are you preparing to fix up a super or two with the two kinds of sections—on the one side the plain section with fences and short cleats, and on the other side bee-way sections with solid separators clear across the faces?—ED.]

MR. EDITOR, please ask J. H. Martin why under the sun he wants handholes if, as he says, p. 249, he can carry a hive with more comfort by grasping the bottom. I'd ask him myself, but I'm not on speaking terms with a man who talks that way about cleats. A handhole is not so comfortable, and you can take hold of a cleat at the part you like best, and two can carry the same hive. The room cleats take in hauling doesn't count much if the weight is unchanged. A hive has two cleats, and only the back one takes extra room. If the cleats in a load took the room of 20 hives, as friend Martin says, there would be more than 500 hives in the load. I didn't think Mendleson had such big loads. [You and J. H. can "have it out." GLEANINGS will furnish the arena as usual. Let's see. You and Doolittle and you and the Rambler are going to fight it out with each other.—ED.]

DR. A. T. PEETE says in *Review* that editorial comments are of more value than any thing except occasionally some rare article. Everybody wants the editor's judgment.

Hutchinson thinks editorials are valued partly because, having much experience in writing, an editor has a pleasing manner, but still more because of the continual stream of correspondence passing through his hands by which he learns to look at things *from various points of view*, and to express his ideas in a very few words. I don't believe you've hit it, W. Z. An editor's words are valued just because they are the words of the editor. The very position of editor, in the minds of us common bee-keepers, presupposes a man who knows more than the rest of us. And so it is that sometimes an utterance "goes" because it comes from the editor of a one-horse paper, when without the paper the same man would not be heard. Happily the editors know as much as they're supposed to know—in most cases—at the present time. [I favor Hutchinson's views rather than yours, doctor. An editor *ought* to know better than the majority of his readers about the subject to which his journal pertains; if he doesn't he will have to step down and out. The mass of matter that passes before his eyes, the greater part of which he can not publish, ought to give him a broader view than that of any reader or correspondent. Then, too, some of these editors travel among bee-keepers — not only get at their written opinions, but their face-to-face notions. I do not believe an editor's opinion, in this country at least, is valued simply because he tries to fill the editorial chair.—ED.]

HOLD YOUR HORSES, Ernest! Don't put it quite so strong as to say the plain section "seems about to revolutionize" (p. 267). Remember you're right in the storm-center, and 500 miles from Medina the air seems quite calm. At that distance the most that can be said is that there are possibilities worth looking into. [Very true, doctor; I am in the storm center, and you in the calm. But you will notice that I used the qualifying word "seems." Perhaps I could have expressed my meaning better if I had put the word in italics; and the word "seems" also implies that I was speaking from my standpoint. If you could be at the Home of the Honey-bees, and see some ten girls making fences with the latest approved appliances, turning them out at the rate of 700 or 800 a day apiece, the men sawing out the stuff, and if you could then go into the packing-room and look over the orders for sections, you would *begin* to think yourself, from all indications, that the plain section "seems about to revolutionize methods of comb-honey production."

Now, on the other hand it is fair to state that the great bulk of the sections *without hives* that go out from the Home of the Honey-bees are of the old style, because this year, as in the past, bee-keepers buy what they have been used to, and what they have had right along, rather than some new-fangled thing. This is reasonable, and as it should be. The principal part of the fences and sections we are making are to go in hive combinations. You see the point is right here: Where people are to buy new hives, why not give them the very latest, as they will cost no more?

I do not need to "hold my horses" just yet, because nothing we have ever introduced, I think, ever took so heartily as the plain section. This is not new, but has been in use all of twenty years in a quiet way by bee-keepers in different parts of the country; and the fence itself is also old, having been in use for some eight or ten years, so that I do not regard these new old things as an untried experiment. We can try these things all this blessed season and then not know as much about them as those who have tested them years before us. It certainly does look as if it would in time change our methods of comb-honey production.—ED.]

CALIFORNIA ECHOES
BY J. H. MARTIN.

In a footnote to Dan White's valuable article upon the grading and sale of honey you lay down certain conditions as follows:

"I hereby agree not to put on the market extracted honey weighing less than 11 lbs. to the gallon." Now, wouldn't it be better to put it at 12 lbs. to the gallon? 11-lb. honey may be all right; but 12-lb. honey would be better, and we want the very best. I know that Dan White will vote for the latter.

There was several tons of honey sent to the Exchange last fall, weighing between 11 and 12 lbs. to the gallon. It was white, and had commenced to granulate. I smelled it, and it had that well-known sour smell. The taste made the condition still more pronounced. I had a bottle of it handy for inspection, and nearly every bee-keeper pronounced it fermented, much or little, according to the state of his smell or taste. A dealer in honey came in, and it was given to him to test, and he pronounced it fine honey. It was eventually sent away, and there was no complaint made as to its quality. Now, in my mind, those bee-keepers who pronounced the honey fermented were better judges of the honey than the dealer or the consumer; but the fact that we never heard from the consumer is not a proof that the honey gave entire satisfaction. The consumer might have bought a small amount, and, finding it not to his taste, would probably eat it and say nothing about it; but he would be careful not to buy that kind of honey again. I have had an opportunity to see that feature demonstrated in this city, where all sorts of honey are sold. The consumer will soon learn where to find the best grade, and stick to it. Let us make the standard 12 lbs

I note that the apicultural-editorial family are bowing and shaking hands with that new editor of the *American Bee-keeper*, Mr. H. E. Hill. Mr. Hill spent a year or so in California; and, though it was a year or so before I came to this State, and though I never saw Mr. Hill, I have heard so much about him that I must just tell what sort of a fellow he was in the management of bees. My first year in this State, and first bee experience, was with the same parties with whom Mr. Hill worked while here — Messrs. Wheeler and Hunt. I noticed that Mr. Hunt had considerable to say about the way Harry Hill managed things. Mr. Hunt, in observing my way of uncapping honey in the ordinary way, with an upward stroke, broke right out in a sort of enthusiastic way, and said, "That Harry Hill, who worked for us, could beat anybody I ever saw in the uncapping of honey. Why, he could uncap with an upward and a downward stroke of the knife; and, before you knew it, it was ready for the extractor. Yes, sir; that Harry Hill was the best all-round bee-man I ever knew."

I heard Mr. Hunt extol Mr. Hill so much that it was a real relief when I, one day, went out on an inspecting-tour with Mr. Wheeler, and he didn't mention Hills of any kind all the way to the apiary. We went to the San Mateo apiary (you know where it is, Harry, up in that canyon past the old Spanish burying-ground where the graves all have a pile of stones on them to keep the coyotes from digging up the bodies). When, in the course of our inspection of these cross Cyprian bees, I stopped to pull out a few stings, Mr. Wheeler broke right out just as Mr. Hunt had as aforesaid:

"Why, that Harry Hill, who worked for us, could endure more stings than any fellow I ever saw. He cared no more for stings than I would the bite of a fly. Then he could hive more bees in the shortest space of time than any other live man. We came out here one Sunday to see to the bees, and found several swarms on the bushes; and (do you believe it?) he had those bees hived quicker than you could say Jack Robinson. Yes, sir; that Harry Hill was the best all-round bee-man I ever saw."

Mr. Wheeler's talk on the return trip was of a very hilly nature, and I was really glad to get back and have a talk with Mr. Hunt.

Now, if Mr. Hill can sling ink and scissors, and uncap editorials with an upward and downward stroke, the rest of the editorial family had better look out. All hail to the new departure with the *American Bee-keeper*. I believe I will subscribe again.

Southern California is strictly in it for a short crop of honey again. Ventura County, where the best quality of honey is produced, is as dry as a bone. That locality is dryer than the more southern counties; but we have nothing to brag of here. Five inches of rain will not make a honey crop; and, even should we get heavy rains now, the moisture would hardly have any effect on the sages. The only chance left is for a moderate yield from wild buckwheat, and that produces dark honey. Then there is a prospect that there will be a moderate yield from the orange bloom, which is of great extent in Riverside and Redlands. You Eastern honey-producers will not have the California crop to compete with you this coming year.

Mr. N. Levering, the veteran bee-keeper of Southern California, has come into the possession of several apiaries in the extreme northern portion of the State, through the death of his brother. As Mr. Levering does not expect a yield of honey from his bees near this city, he will soon start for the northern apiaries, where a fair yield is expected every year. The northern counties are so near the web-foot State of Oregon that they always get an abundance of rain up there. If we could only turn our long State end for end about every other year we too might be benefited by a perpetual honey crop. I hope Mr. Levering success in his venture.

There is considerable moving of bees just now in this locality. Mr. Brodbeck is moving his bees from the dry hills to the alfalfa districts south of this city. Mr. Graham, the extensive bee-keeper in the northern portion of this county, we understand, is moving his bees over the Tehachapi Mountains into the alfalfa district near Bakersfield. And that is what is the matter. Those fellows up there will make several kicks about those foreigners coming into their pasturage. Well, I trust that there will be no friction in the scramble for pastures new and profitable.

My friend W. A. Pryal, of Oakland, must be much discouraged over the bee-keeping prospects in that portion of the State. He writes me that he has sold part of his apiary, and has sent the rest to Diabolo (that is the way the Spanish say *devil*). I have no doubt my friend means Mt. Diabolo. I regret to hear such a discouraging report from that portion of the State.

GENERAL CORRESPONDENCE

A FOUL-BROOD LEAFLET FOR FREE DISTRIBUTION.

McEvoy's Treatment.

BY W. W. CASE.

Mr. Root:—In your Feb. 15th issue you express a desire for Mr. McEvoy's treatment of foul brood—something capable of being issued in pamphlet form. I herewith inclose you a pamphlet of Mr. McEvoy's, issued by the New Jersey State Board of Agriculture, which I think entirely fills the bill.

The preamble and resolutions on p. 2 were drawn by me, I being then (as well as now) secretary of the Huntingdon Co. Board of Agriculture. In all probability, if the edition was stereotyped you will be able to obtain the plates by addressing the Hon. Franklin Dye, Trenton, N. J.

The bee journals of the country must begin to close up on foul brood. From experience and observation I firmly believe that fully forty per cent of the colonies of the country are infected, and the infection may be yet greater.

Now, go careful on "that disease that so closely resembles foul brood, yet is not," as, under proper conditions, I fail to find any difference in them, each running into the other, and both equally fatal in a malignant form, and are, I firmly believe, different forms or stages of the same disease. You will probably say that I have never seen true foul brood. But I will say that I have seen the disease sweep apiary after apiary out of existence, and have not visited an apiary the past year that was not infected, and yet right in the midst of an epidemic I have seen the disease disappear like magic, and not return, even after a lapse of four years.

Now as regards section honey. Don't you think the upper tier of boxes on p. 128, Feb. 15, is a libel on the profession? Should I run across a bee-keeper who, in even a poor season, could produce nothing better than shown there, I should heartily advise him to soak his head and brimstone his bees.

I say it, and I say it emphatically, that, out of a crop of 3000 lbs. of comb honey the season just past, my honey (sections) was filled equal to that shown in the bottom tier. After all the fine talk on grading honey, do you call that top row any thing but second-class honey? If you do, I should not want you to grade or pack honey for me. I could not hold my trade on it a single season. In the shipments and sale of over 100 cases of honey last year, not a case was disgraced with such sections as are shown in the upper right and left hand corners. The bee-keeper who will furnish such honey for an honest comparison richly deserves a leather medal.

I would say, concerning sales the past season, that my crop was disposed of in less than three days, soliciting at more than 40 per cent above local prices, orders for over 1100 lbs. being taken in less than two hours.

Should such "sass" as this be appreciated, you will hear from me again if I can spare the time. I would say, in closing, I have missed but one honey crop in twelve years.

Baptisttown, N. J.

[I have looked over this pamphlet, and to my mind it is the best of any thing that has yet been produced. Perhaps we can issue it in cheap form, and along with it give a copy of that excellent foul-brood law which has given such good results in Wisconsin. If this pamphlet were generally circulated among bee-keepers it might stimulate an effort to secure good foul-brood laws in every State. The State of New York is very much in need of an active foul-brood inspector — not that I claim that foul brood is pretty well scattered over the State, but there are certain sections where the disease, unless checked, will soon be working havoc. One would think that bee-keepers ought to have gumption enough and interest enough to know when they have the disease, and, having found it, to cure it. The fact of the matter is, there are hundreds and hundreds who do not look into their hives until toward the approach of the honey-flow, and even after that they do not examine into the brood-chamber the rest of the season.

In regard to that honey in the upper tier: In defense of Mr. Hutchinson I would say that the honey selected is a fair average of what I have seen on the market, and what we have been able to buy. Even Mr. Doolittle, who defends the sections with the bee-ways, thinks it more artistic than the honey in the lower tier. If you have a method whereby you can secure well-filled sections as good as those of Mr. Aspinwall's or Danzenbaker's, in the old-fashioned two-bee-way sections, you deserve a chromo — not saying that you can not do it, for I believe you can. I should be pleased to have you tell us something of your super and of your method. We can stand your "sass," especially when you do not put it on any thicker.—Ed.]

THE PAST SEASON IN MINNESOTA.

Young Bees or Old for Going into Winter Quarters; Foul Brood, and Curing the Same with Bisulphide of Carbon.

BY C. DAVENPORT.

The past season in this locality was one of the poorest for honey that I have ever known; still, it might have been much worse, as some surplus was stored by strong colonies. During the season of 1896 there was an abundance of white clover here. In fact, it was one of the heaviest stands I ever saw. The past season there was but very little of it that blossomed, as it was, early in the season, greatly injured by a species of small ant. These ants were very small, but they made up in numbers what they lacked in size. All the pasture land in the rich bottom ground around here was literally dug up by them to such an extent that, although we had plenty of rain, the grass in some of these pasture lands turned brown, the same as it did during the great drouth we had here a few years ago. During the fore part of July these ants disappeared as mysteriously as they came; and, though the white clover revived some afterward, it was very dry all the fall, and the prospect for a good stand of white clover next season is poor. There is considerable basswood here; but last season, as for several years past, it was an entire failure. From two yards the past season, containing 241 colonies, spring count, they averaged about 25 pounds of surplus per colony—about two-thirds comb, the rest extracted. About half of it was white, the rest amber and dark; but very little of the white would grade fancy.

I had a chance to sell the bees in the out-yard last fall, and, owing to the poor prospect for next season, I let them go. I now have 153 colonies which were cellared the latter part of November, most of them heavy with stores, and all strong in bees. As there was a fall flow, brood-rearing was kept up late, so there was plenty of young bees, which, in the opinion of many, will be a large factor toward their successful wintering. But my own experience leads me to believe that late fall flows and young bees have but little to do with successful wintering, from many similar instances which lead me to this belief. I will cite that, in the fall of 1896, there was no fall flow.

Honey-gathering stopped with white clover, and brood-rearing stopped very early also, as no feeding was done until late for winter stores, to such colonies as needed it, and out of 244 colonies I lost only three.

Now, during the fall of 1894 there was a fall flow, and brood-rearing was kept up very late; but I met with a very heavy loss that winter and following spring, but it was owing mostly, I think, to the poor quality of the fall flow.

Some time ago I noticed in GLEANINGS that foul brood was spreading in some parts of the country. While I have never had a case of foul brood, I have always had a great dread of it; for, although it can be cured, it is a great expense, and involves a great amount of work. Some time ago, in the *A. B. J.*, I gave it as my opinion that the fumes of bisulphide of carbon would kill the germs and spores of foul brood. I described how I subjected a piece of foul-brood comb containing dead and rotten larvæ, as well as cells of sealed honey, to these fumes for about ten hours, in an airtight box. This piece of comb was then placed on top of the brood-frames of a colony. The cover was then pressed down, and the front of the hive raised so that none of it could escape or get out of the hive unless carried out by the bees. This was three years ago last summer, and no signs of the disease have appeared in that colony yet. There is no mistake about that comb being foul broody. It was genuine foul brood in an advanced stage of rottenness. Of course, one trial is not sufficient to test the matter for certain; but from numerous experiments I have made with these fumes I believe they will kill the spores of foul brood or any thing else if they are subjected to them for ten hours in an airtight box. Perhaps much less time would suffice. I see from experiments made at some of the State experiment stations that these fumes will also kill or impair the vitality or germinating power of grain and seeds. Now, if these fumes will kill the spores of foul brood by their use, the disease can be cured with less than half the work and expense of the most approved methods practiced at present; for, as I explained in the article referred to, a tank could be made large enough to hold a number of hives at once. If there were many colonies affected, only a few extra hives with frames would be necessary, as the infected hives and combs could, after treatment, be used for the second change. These fumes do not injure the combs or frames at all; and to disinfect combs or hives by this method, all that is necessary is to place them in an air-tight box, or one as nearly so as possible, with some of the carbon in an open dish so it can evaporate. The amount to use would not matter, so there is enough, as any that did not evaporate would be just as strong or good to use the next time.

Perhaps if their attention were called to the matter by this, some of the scientists among us who are able to handle, cultivate, and propagate the germs and spores of foul brood will subject some of them to these fumes for ten hours or so, and let us know whether it kills their vitality or germinating power or not.

Southern Minn.

[I wish some of our friends who are troubled with foul brood, and who are "given to an experimental turn of mind," would test the bisulphide treatment of friend Davenport. The only item I think it would save would be the comb. The bees, of course, during the interim of fumigation, would have to be in some other quarters. By the McEvoy treatment there are no acids, no fumigation, and no scalding of hives; indeed, the bees are put right back into the same hives; but the frames, combs, and brood are destroyed. By Mr. Davenport's fumigation method, the brood will be destroyed, but the comb and frames will be saved.—ED.]

BEE-PARALYSIS A LA WALKER.

Going without Breakfasts Beneficial; the Average Weight of Combs.

BY O. O. POPPLETON.

On p. 625, Sept. 1, 1897, Mr. Walker tells of curing bee-paralysis by running swarms from his diseased colonies into hives from which healthy swarms had issued. His bees must have a peculiar form of the disease. I have never had a diseased colony cast a swarm. Again, many colonies seem to get well of themselves late enough in the season for swarming to take place, especially those that are affected so lightly as to be anywhere near in swarming condition. I hope to see the Monnier cure prove successful; but Mr. Walker's method of mixing swarms is very little proof of that fact. What I want is a cure that will work earlier in the season than swarming-time.

On p. 823 are some comments on the healthfulness of going without breakfast. While living in Cuba we had to adopt Cuban ways in living—that is, breakfast at 9 or 10 o'clock; dinner at 3. This was so satisfactory to us in point of health that we continued doing so for years after returning to the States, and gave it up only because of the inconvenience of having our meals at different times from our neighbors. Our experience was much similar to that of your Australian correspondent.

I was glad to see Dr. Miller (p. 876) catch you up on that "10 lbs. of honey in a frame" statement of yours. We see a great many loose or careless statements of weight of honey in hives and supers; and while I have never weighed full supers I have weighed hundreds of full combs, and doubt whether any super holding 10 Langstroth frames ever contains over 50 lbs. of honey. Your estimate of 75 lbs. as the weight of a full super, including hive-body, frames, and combs, is probably too high.

On p. 124, both Dr. Miller and yourself seem to have had no trouble with the heads of spacing-nails catching in the wire cloth in extractors. I have used spacing-nails for over 25 years, and, with the old style of extractor, had no trouble either; but I do have trouble with the reversible extractor. The narrow baskets give less space for handling the combs, and the nails very frequently catch and bother. This is especially true when some one else is running the extractor besides myself; but they bother me too much. The small ¾-inch fence-staples would be all right if they didn't split the frame in driving. Your new spacing-staple is too broad to enter the wire-cloth meshes, which, of course, can not be tolerated; but while in your workshop in Medina a year or two ago I saw on your bench just the thing—a wire staple made of very small wire and small bend. I inclose one so you can see what I mean. They answer my purpose perfectly.

On p. 138 Mr. Doolittle discusses the old question of the honey-gathering qualities of the golden Italians, dark ones, or hybrids. He thinks the "true solution of this question depends on whether we are producing extracted or comb honey." I think he is only partly correct. The time of season when the main honey-flow comes is also a very important factor in determining which will be the best bee for any one of us individually to keep. I am referring to the production of extracted honey only, not to comb honey. My keeping bees in such widely differing conditions as prevail in Iowa, Cuba, and Florida, has taught me many things that I should have given little attention to had my work been confined to one locality. Italian bees, especially the more uniform lighter-colored ones, seem to have the storing instinct more fully developed than the hybrids. Whenever the honey-flow is heavy, either early or late in the season, they devote their work to storing honey at the expense of brood-rearing, while the hybrids, early in the season, retain more of a disposition to raise brood at the expense of honey-storing. Later in the season there is much less difference in this respect between the two kinds of bees. Thus, if one is in a locality where the main honey-flow comes early in the season, like most white-clover localities, the yellowest and purest Italian bees we can get will give the best results; at least, such was true with me in Iowa. If the main honey-flow comes later in the season, say in July, as it does with Mr. Doolittle, the hybrids will do fully as well. If the flow is very late, like that from buckwheat and goldenrod, I should prefer hybrids, possibly even blacks. In both Cuba and Florida I have had much the best satisfaction from hybrids—better than with either of the pure races.

Stuart, Fla., March 14.

[In the few cases where I have seen bee-paralysis in the North, I have never come across one yet where the colony seemed vigorous enough to cast a swarm. My experience has been more in line with your thought, that the bee-paralysis Mr. Walker reported was either not bee-paralysis, or something a little out of the order of that disease.

I believe the majority of people of sedentary habits, or those who do not perform hard labor, would be better off with two meals a day than three. But a laboring man would hardly be able to get along without three meals; and even then I know that many of them say they are "mighty hungry when the next grub time comes around."

Yes, Dr. Miller did catch me up, but I thought I crawled out of my hole pretty gracefully, especially when I said that the combs on which I based my estimate of 10 lbs., of years ago, were spaced 1½ inches from center to center. You remember I did find some combs spaced 1⅜ from center to center that weighed 8½ lbs. Still, 5 lbs. is a fair average, taking combs as they run.

So you think that my 75-lb. estimate for a full super was probably too high. Don't forget that I was talking about those "awful heavy supers," the regular back-breakers. Every comb was filled out solid with honey, and as such run over 8 lbs. in weight — say it is 8½ — it makes 68 lbs. That leaves only 7 for the weight of super and cover. There, don't you see how I get my 75 lbs., especially when I set it as the extreme limit? We have had supers more than once at our out-yard that were crammed in just the way I speak of, and they were regular back-breakers, I tell you; but it would be more exact to say that, on the average, extracting-supers would run between 40 and 50 lbs., counting that the super was 8 frame, full size.

When we last fall adopted spacing-staples, we placed them just far enough from the end-bar so that, when the frame was placed in our regular extractors, the staples at both ends would just "clear" the wire cloth and its binding at both ends. We make our comb-pockets quite a little shorter than the length of the Langstroth frame.

With regard to hybrids for late flows of honey, your experience would agree very well with that of the York Staters. Like the rest of us, they have a white-clover flow, but, unlike the rest of us, later on in the summer they have buckwheat — thousands and thousands of acres of it. I do not think I saw an apiary of pure Italians anywhere in York State, except at Doolittle's and Salisbury's. Hybrids are used because they are less trouble to raise, and because they are no doubt better for buckwheat.—Ed.]

* * *

HIVES ON FOUR BLOCKS.

The Pettit Method; the Divider and the Fence; an Objection to Deep Entrances.

BY JAS. CORMAC.

Reading your comment on one of Dr. Miller's Straws, where he remarks that an entrance of ⅞ inch the whole width of the hive is not enough for him, and that a chance for a current through is needed, I would say that, from my point of view, the doctor is, as in most of his remarks as to changes and improvements, in accord with my experience, except as to T supers. Having practiced the placing of blocks under each corner of the hive, to give ventilation, I find it is an improvement during the heated term; but, unless one's attention were given to their removal at a time when the honey-flow ceases suddenly, trouble might ensue that would set the whole apiary wild on account of robbing.

Last season the Pettit method was tried, wedges being used, ⅞ inch at the thicker end, giving 1¼-inch entrance. But this required a new lot of entrance-blocks of the same width. All said, "Too many fixings to care for." To obviate this difficulty a contrivance made of heavy galvanized iron was attached to the front of the hive, which can be kept on at all times, and is handy for several purposes — in closing the entrance when taking hives into the cellar, closing the entrance when cold days come in the spring, or any time. This attachment can be used on each end of the hive, and closed quickly, leaving the hive raised at any height from the bottom-board one desires.

This mechanism will answer your query as to the "smart Allick." A strip of galvanized iron, as wide as the entrance is deep, 13 inches long, with two strips of same ½ inch wide, is attached to the front of the hive. The two small strips ½ inch wide are riveted to the long strip (about 8 inches apart) at right angles. The rivets are not driven hard enough so but that there will be a little play. This long strip is then set before the entrance of the hive, and a nail is driven into the free ends of the two short pieces in the hive-front. The end at left hand is flush with the outside of the hive, and the right-hand end with the inside, so that, when moved toward the right to open the entrance, the strip will not project far out. The right end is bent ¼ inch at a square angle, to allow a hold to move the slide. By riveting the short strips to the inside of the long one they lie flat on the hive, and, when nailed with a ¾-inch nail, will hold this guard at whatever point placed. To enlarge the entrance, move to the right.

I have been much interested in the fence discussion, having tried the Pettit system on over 50 hives last season, with fence and holes ⅜. A pile of sections pressed between two boards were laid off in small squares, and then bored with a new ⅜ bit, the holes dodging like a checker-board. The fence was $\frac{5}{16}$ between strips, and gave ribbed combs. The holes gave perfect combs, smooth as between separators of usual pattern.

One thing against the large opening: When a swarm went out it went with a whiff, like the exhaust-pipe of a locomotive. I found the clipped queens about three feet from the entrance, and many bees too young to fly. On one occasion a swarm came off that had superseded the old queen (as all were clipped in spring); and before they had time to cluster, two more shot out like a powder charge from a gun, without waiting, joined the first, and clustered on an out-hanging branch of a large elm, 35 feet from the ground. I jarred them off with a long willow pole, with a hook in its end over the limb. But few reached the ground, as they regained wing. Several attempts failed; so you may conclude that a stone, with rope attached, thrown over the limb on which a cluster hangs, will not always be effective. A mere handful may reach the ground. In taking hives resting on wide bottom strips into the cellar with this device, there is no need of turning the bottom over. Shut the hive with the adjustable entrance-slide. When in the cellar, open on both ends, and cut, from a roll of ⅜-mesh wire, strips 1½ inches wide and 16 inches long, bent one inch on each end to clasp the hive-sides. This method secures plenty of air-space for dead bees; also freedom from mice around the bees. The cost is merely nominal per hive. Small rivets, $\frac{1}{16}$ x $\frac{3}{16}$ long, cost per 1000 25 cts., and all tinsmiths keep galvanized iron.

Des Moines, Iowa.

[Yes, indeed, any one who makes a practice of raising a hive up on four blocks, to secure better ventilation, for the purpose of discouraging swarming, must "look a leedle oud" when the honey-flow stops — that is, providing he uses one-story colonies. A good strong colony—a double or triple decker, such as I would use and do use—I think would be fully capable of holding their own. No little colonies for me.

So far as I know, all reports go to show that, when the slats of a fence are spaced as far apart as $\frac{5}{16}$, ridge comb honey is pretty sure to be produced. I have yet to hear of an instance, however, when the slats were spaced as scant as $\frac{2}{12}$, that there was any washboard surface on the honey. If there is any such instance, let the brother hold up his hand, and at the same time send a sample of the honey and of the fence that did the work. If the slats, however, were too narrow, say ½ inch, I am of the opinion that, even if they were spaced $\frac{2}{12}$ inch, a critical eye would detect a slight ridging. When we adopted our form of fence we did a great deal of corresponding, asking the opinions of those who had tested the fence during the years gone by; and the result was that we fixed upon the style that we have illustrated.—ED.]

* * *

THE DISK SECTION-CLEANING MACHINE.

Conditions under which it may be Made to Work Satisfactorily; High Speed and Power Necessary.

BY JAMES ROAT.

In the Feb. 1st issue of GLEANINGS you illustrate the Aspinwall section-cleaning machine. I have used for the past two seasons a machine somewhat like his. It was invented in 1895, improved in '96, and the past season I cleaned the bulk of my crop with it. It is simply a disk a little smaller than the sheets of sandpaper which are to be used on it. The disk is made of two boards placed with the grain of one crossing that of the other at right angles, and the two firmly screwed together to prevent warping. The disk is then screwed on the threaded end of a shaft (the end of a saw-mandrel will answer when the saw is at the end of the shaft). Then revolve the disk by running the shaft, and turn it perfectly true with a chisel as in a lathe. Make the face a trifle convex, as it will work faster in removing small spots than it would if perfectly flat. The disk should be run at least 3000 revolutions per minute, and faster would be better, as the sandpaper does not clog as soon when the machine is run at high speed.

As Ernest has lately mentioned in GLEANINGS, we have a great deal of propolis in parts of New York, and our locality is one of those parts. I can not clean badly daubed boxes without first removing the bulk of the gum with a knife, as three or four sections covered with sticky fresh propolis would clog the sandpaper. When the propolis is perfectly dry and hard it can be sandpapered successfully, but not when fresh.

Formerly we considered 100 sections a day's work—that is, they were scraped with a knife, and then all stains were removed by scraping with glass. Some of you may smile at this; but if you could see our honey before and after cleaning, perhaps you would have some idea of the job.

With the machine, I can clean from two to three times as many, and do it easier and better. I have two machines—one for foot power and one for horse power. I would not advise any one to make one for foot power, as it is so hard to maintain the high speed. One sheet of sandpaper will clean about 70 sections; but I have scraped as many as 140 with a single sheet. In localities where there is little propolis it would work better than here, as you can easily clean a section a minute.

The sandpaper is bent over the edge of the disk, and fastened with four or five small tacks, so a fresh sheet can be put on in a moment.

Reed Corners, N. Y., Feb. 4.

[There, friend R., you have given us just the information we have been seeking. It seems, then, that the sandpaper will fill up with propolis; but occasional renewing and high speed, secured by power, obviate nearly all the trouble. This will explain *why* some have been successful with these machine cleaners, and some have not.

Another fact seems to be brought out; viz., that the hand and foot power machines, at least those that afford only a low speed to the surface of the sandpaper, probably can not be made a success. That means that they must either be speeded up or cast aside. May be we'd better write this down big in our hats before we do any expensive experimenting.—ED.]

NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

At Frank Boombower's; Cutting Glass for Sections: Boomhower's Scraping-table.

BY E. R. ROOT.

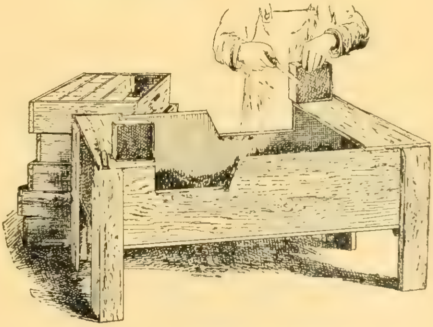
Along toward the latter part of the month of September I was circling about among the bee-keepers of Schoharie and Albany Counties, New York. As I made my way over some of the country, well did I remember how I had, seven years before, with a 52-pound bicycle, puffed and pushed over those same hills; but now, partly because the aforesaid hills scared me out, and partly because I wished to save time, my 25-pounder had been left in Syracuse, and I was speeding my way much easier and faster on the train.

Along one hot afternoon I found myself in front of the residence of Frank Boomhower, Gallupville, N. Y. As I knocked at the door of the workshop I wondered whether I should find my friend inside. Sure enough, there was Mr. B. and his twin boys, about 18 or 19 years old. The latter were scraping sections while the father himself was cutting glass, for through that section of country, at least, a very large part of the comb honey is glazed.

After going through the formality of introducing myself, and getting acquainted, Mr. B. began at once to show me the kinks of the trade. When I came in I noticed he was cutting glass, or, rather, breaking it up, in a little different way from what I had seen before. With a good diamond he marks the several sheets off into checker-board squares, as it were, the squares being of the same size as is required to cover the face of the section. Several of the sheets are marked off in this way, after which they are piled one above another, but so as to bring the crease-marks made by the diamond directly in alignment.

Mr. B. now takes up the pile of glass in *both hands;* and, holding one set of crease-marks directly over the edge of a box, he brings the glass down with a smart rap *en masse*, and, presto! every sheet is severed in a straight line at a crack. He then moves the bundle of glass along to the next crease, and gives it another crack, and away goes another handful. After the glass has been divided up one way he turns the glass round at right angles, and gives it another crack along one of the scratch lines. So on he proceeds until the whole bunch of glass is broken up into squares, and as quickly and nicely as you and I would break up one sheet at a time. I explained this kink to quite a number of bee-keepers, but they had never learned it, but promised they would try it at the first opportunity.

Well, after Mr. Boomhower had broken glass to my satisfaction I turned about to see how the boys scraped sections Here is their table.



BOOMHOWER'S SCRAPING-TABLE.

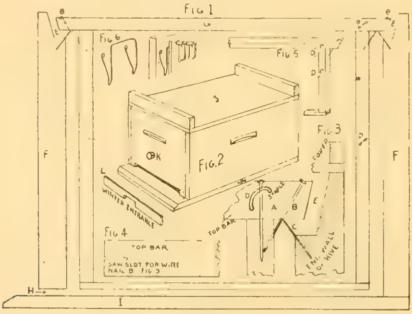
The engraving will make its manner of construction plain. It is simply a common dry-goods-box, mounted on four legs. At each end a part of the cover is left on; and on each side, and flush with the edge of these side-boards, a notch is cut. As I watched the boys scraping, one on either side, I soon saw the object of the aforesaid notches. A section is set down in position indicated in the drawing, with one side projecting *slightly over* the notch in the side of the box. The knife makes one sweep, sliding *clear past*, down into the notch, sweeping the scrapings into the box. The section is then reversed, and the other side is treated in like manner. Last of all, the edges are gone over. Within convenient reach of the boys were a pile of shipping-cases that were being filled. As soon as a section was cleaned it was set down into the case, and then another was taken from the super just as it came from the hive, this super being also conveniently in reach, as shown in the illustration. The work is so arranged as to make only one handling; and, if I remember correctly, the grading was done at the same time. There is one case for first quality, another for second, and so on.

After I had watched the boys crate, looking over toward a pile of hives I said:

"Is this the Boomhower hive?"

"Yes," said Mr. B., "and it is the most convenient hive I have ever had."

Then he went on to tell me how he had experimented with the various kinds of hives and brood-frames, sometimes changing over his whole apiary. All this experimenting had cost him hundreds and hundreds of dollars; but now he has got through. He had found the *ne plus ultra* in brood-frames and hives. He has tested them thoroughly, and the more he tested them the more he liked them. He could handle his brood-frames any time without a screwdriver. They were of the self-spacing type, always ready for moving, and always easily pulled out of the brood-nest. "Why," said he, they beat your Hoffman frames all to smash. My neighbors who have been using the Hoffman have discarded them for my frame."



Nearly a year ago (May 1st, p. 334) we gave an illustration of this hive and frame, and for the convenience of our readers I reproduce it here. The hive is of the ordinary eight-frame Langstroth type; and, so far as the hive proper is concerned, it differs but little from the ordinary eight-frame Langstroth. But the particular feature of the hive is the brood-frame and metal rabbet. This last is a narrow strip of sheet iron let into a saw-cut as shown at C in Fig. 3. He used spacing-staples between the sides of the frames as shown in the illustration; and a nail driven through the projection of the top-bar on a slant into the end-bar prevents end play, for the top-bar itself is shortened on both ends so as to leave a bee-space, as at E, around the ends, and thus do away with the gumming of the ends to the hive-rabbet itself.

The staple-spaced frame that we introduced lately is a good deal after the same style; but Mr. B. considers his end-spacing nail better. I could not see it just as he did, but he says he has tried both ways, and says he knows the nail is better. Since that time Dr. Miller, who has tried both ways, has decided in favor of the staple.

I found Mr. Boomhower to be a man of practical ideas, and very decided in his opinions too; and while I could not agree with him on all questions, yet from his standpoint he gave very good reasons for his preferences.

In our next issue I will say something further about him, and also about the greatest buckwheat country in the world, for friend B. is in the heart of that region that produces millions of bushels annually. I will also introduce you to his son Novice, one of the lightning operators.

* * *

METAL-SPACED HOFFMAN FRAMES.

Minnick's Hive-stand; Open-corner Sections.

BY JAS. A. MINNICK.

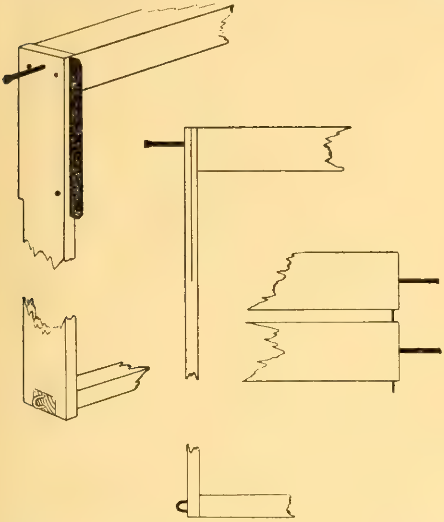
I am glad to note the interest that you take in metal Hoffman frames, as designated in your editorial on pages 57 and 58. Mr. Marks' frame is substantially the same as mine (a sample of which I send you by to-day's mail), except he has the metal both on same side of frame instead of diagonally opposite, as in mine; he also uses iron while I use zinc; and his metal pieces are twice as wide as mine; also, he uses a *wood* projection for top-bar that I *could not* be induced to use. I prefer the nail projection so much over the wood that I have sawed off the ends of nearly all of my Hoffman frames that I bought of you, though they have no metal spacers. This nail is allowed to project far enough to just touch back of tin rabbet, as you make them. They *can not* be glued to it as the wood projection, nor does it smash the bees, and they are "cleared out" of the rabbets by the time you set your smoker down.

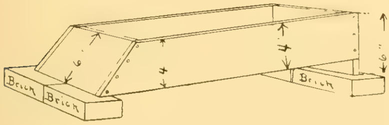
I have about 500 brood-frames and 100 extracting combs of my own make, with the nail and metal bearing, that I made on a foot-power saw. I make only for myself, and it is not patented. It is so good I wish all bee-keepers knew of it.

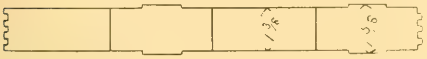
If you will turn to page 249 of *American Bee Journal*, April 18, 1895, you will find a good description of it in detail. In that article you will find that I prefer the wood rabbet. After some years of experience I find that I like your tin rabbet better.

I like your new hive-stand as per last GLEANINGS, and think it is very cheap. Herewith please find a sketch of a stand that I have made and like better, as it elevates the rear of the hive two inches. I had some old oak fence-boards 6 inches wide that I cut the right length, and I use cheap pine ⅞x4 inch sheeting for the sides. The cut fully explains itself.

I have been studying the new fence, no-bee-way sections, tall sections, etc., with great interest. I think I might like a tall section pretty well, but will not change my supers this next season; but I don't think I want the fence, or *any* separators for that matter, as about half of my last-year's crop (a ton) was put up in a 4¼x4¼x1⅜ white-birch section that I got of W. H. Norton, of Skowhegan, Maine (I send you a sample of it to-day). I used no separators, and will this year use them (sections) almost exclusively on 54 colonies. There are *very* few crooked combs; the honey is always white, and the bees will go up into supers *much* quicker, and they are so much quicker scraped.







In the sample I sent you to-day you will find one of the sides (it is a four-piece section) is marked A, and is cut away so as to leave only a two-inch bearing, and I should like to get some that way, as it *will* practically do away with the pop-holes in the corners of sections; 12 sections of the above always weigh more than 12 of the old 4¼x4¼x1⅞, and always look better.

Mr. Marks says that hard wood is better for sections, etc. I think he is right. Try soft maple if you can't get the white birch. The birch is tough, and would make a first-rate one-piece section. Find inclosed a rough diagram of "proposed one-piece section." I should like about 4000 this spring, as per diagram.

Please examine this new section carefully, and say if you can make it in a one-piece form; also if you can get the birch.

Anderson, Ind., Jan. 20.

[Your nail-supported frame is very much like that shown on page 336 of GLEANINGS for May 1, 1897, by Adrian Getaz. The latter uses a nail to support the frame, as you do; otherwise his frame is the same as the Hoffman. You have combined the Marks metal-spaced Hoffman and the nail of Getaz. In regard to the last feature, I will say that, as I said then, I personally have tested it, and have found it wanting. It has too small a bearing in the wood to support a frame filled with honey; and consequently the hole, by the continual weight, is liable to assume an egg shape. This will result in having some of the top-bars up to the required height and some below, causing irregular bee-spaces. Then, moreover, if the nails are not driven exactly in the same position, or if they should be driven a little bit on a slant, it will result in the same irregular bee-space.

The metal-spaced Hoffman is all right; and I should not be surprised if it would some day displace the regular style of Hoffman in use to-day. Take that same frame, as illustrated above, and let the top-bar project far enough in the regular way to catch on to the rabbet and yet leave a bee-space around it, and you will have, in my judgment, an excellent frame.

I do not exactly see the need of supporting the hive-stand on bricks. Who cares if the bottom edges of the stand do rot a little? They will even then last ten or fifteen or possibly twenty years; and four bricks to every hive would make some little expense, especially if one were to so equip several apiaries. The scheme of raising the rear end of the hive up is good.

The section-blank shown is practically the same as was first brought to the notice of the bee-keeping world by Walter S. Pouder, some 10 years ago (see GLEANINGS, page 514, 1888), and later on by our irrepressible friend Francis Danzenbaker. The scheme of giving the bees wide passageways from one section to another is tiptop, and that is one of the reasons, if not the principal one, why honey seems to be better filled out in Danzenbaker sections.

Yes, hard wood may look nicer, but it is much harder to cut, and would make sections more expensive.

Mr. Marks, by the way, believes that it is almost a sin for the manufacturers of bee-supplies to cut up basswood into section honey-boxes, on the principle that it is folly to kill the goose that lays the golden egg; but, as I have before pointed out, the amount of basswood that bee-keepers annually use is a mere drop in the bucket compared with the amount used by furniture-manufacturers, basket-makers, and manufacturers of novelties in general. —ED.]

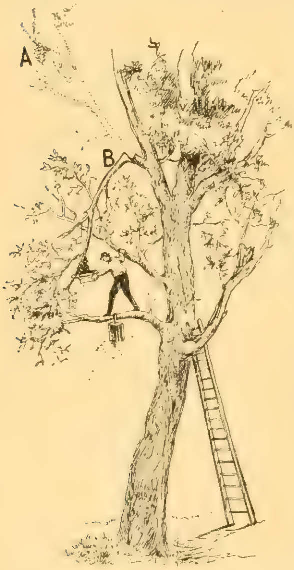
CAPTURING A RUNAWAY SWARM.

How to Get a Swarm from a High Limb of a Tree.

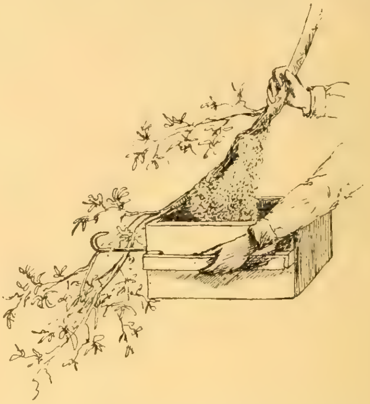
BY G. C. GREINER.

In Stray Straws, Jan. 15, Dr. Miller speaks of throwing a stone, with cord attached, over a high limb to bring down a swarm of bees, to which the editor adds his usual interesting notes. I have tried another way to accomplish the same result, which I think is applicable in at least some cases where the stone-and-cord plan will not work, and do it in much better shape. The following description, with accompanying illustration, will explain the *modus operandi.*

A year ago last summer I had a swarm of bees leave their hive, after being hived three or four times, and go to the near-by woods. They stopped at the first tree they came to, a tall beech, well limbed to within 15 or 16 feet of the ground, and clustered on one of the highest limbs, some forty feet from the ground. (Sec. A, of cut). At first I considered the place beyond my reach, or at least I did not deem it prudent to risk human life for the sake of capturing a few handsful of bees, and decided to let the erring sisters go in peace. A second and closer investigation of the prevailing conditions, however, made the undertaking appear quite feasible, and I proceeded in the following way:



By means of an 18-foot ladder I could reach the lower limbs, and from there I climbed, with saw in hand, from limb to limb, until I reached the place, B. Here the limb with the suspended cluster joined the main body; and by standing on this limb, and supporting myself with one hand on a higher one, I sawed into the former until it began to show plain signs of weakness. I then laid my hand against it as far as I could reach above the saw-kerf, and with a gentle push could give it a downward motion. When nearly level I had to change my help in the opposite direction. The little connection which I had left when sawing had not the strength to support the limb in that position; and if given its freedom then, it would have dropped down with a crash, and, undoubtedly, would have made sad havoc with the bees. To prevent this I stepped on to a lower limb, from which I could support the moving limb sufficiently to let it descend gradually to its perpendicular position. In this I succeeded so well that hardly a dozen bees took wing in the whole operation. They simply changed from one angle to another. After that, hiving was an easy matter. By standing on the lowest limb I could just hold my hiving-box under the cluster (see illustration), and, with a sudden jerk, lodged them in the box. The box was then hung on the limb right under my feet, and, keeping up a continual joggle, as the editor says, for a short time, I soon had the swarm quietly settled in the box. From the ladder I had easy access to the box, so that the final transfer to the hive was the work of a few minutes.



Naples, N. Y.

[Your plan will work well providing the tree does not happen to be a beautiful shade-tree on a front lawn, or, worse still, in the yard of a neighbor. Bees seem to have a fashion of clustering, in most cases, on trees around the house — such trees as we generally do not like to mutilate.

While I was at the home of W. F. Marks, Chapinville, N. Y., he showed me a locust-tree in the rear of his yard, at the top of which was a limb some 30 ft. above the ground, where a swarm clustered. Not knowing whether or not he might dislodge them he took his shotgun and "let drive" two charges right in the center of the cluster. It stirred things up a little, and, I believe, resulted in the bees abandoning the limb and clustering lower.

If one were an expert marksman, and the bees clustered on a limb no larger than one's finger, he could, with a rifle, bring limb, bees, and all, down.

Some few years ago, while out hunting, I coveted an oriole's nest which I saw overhanging the water. It was impossible to reach it, but, drawing up my rifle, I "drew a bead" on the limb where I desired it cut, and, crack! down came the limb, cut off almost as smoothly as it could be done with a—well, a dull knife. I do not suppose I could have done the thing again, even if I had fired a dozen times. But it occurred to me that one might, with a large enough bullet, thus bring down a swarm not otherwise accessible.—ED.]

AVERAGE YIELD FROM 200 COLONIES.

Relative Values of Different Locations.

BY M. A. GILL.

In the *American Bee Journal* of Dec. 23d the question is asked, "What would be a fair average honey crop with an apiary of from 200 to 300 colonies, located in Central or Northern Illinois?" I have read and reread Dr. Miller's answer; and while I should fear to "lock horns" with him on any subject I feel inclined to raise his yield at least 20 lbs. per colony. He says the yield would no doubt be 20 lbs. less than nothing.

Does not the doctor make his estimate from the poor seasons which are still so fresh in the memory of most of us? He says that 75 or 100 colonies might give a surplus of 35 lbs. per colony. I can not see why Illinois should be so much different from Southwest Wisconsin, for I have noticed, while traveling through Illinois, that it excels Wisconsin for sweet clover; and right here I want to go on record as saying that *no* plant equals sweet clover to fill in all gaps, and piecing out the honey-flow to late in the season.

I know of many locations in Wisconsin where 200 or 300 colonies would have not only made a living, but given a fair surplus for the past twenty years, with the possible exception of three years; and during those years of scarcity twenty colonies would surely have to have been fed.

It has been my experience, that, when there was a dearth of honey in a *good location*, it would affect twenty colonies nearly as much as two hundred; hence I can not think that the best locations, even in Illinois, will not carry 200 colonies for a term of years without being fed. I am not saying that it would be the most profitable thing to do; but I want Dr. M. (whom we all look up to as an oracle in bee-lore) to either raise his yield or the number of colonies which he says can be kept in a good location in Illinois.

I am now going to give you some figures, and you may have to appoint some one to help the doctor believe them, for you know it is often said that it takes "two easterners" to believe one "western story." I want to say to the doctor that the next time he wants to refer to some locality where a large number of colonies are massed on a small amount of territory, he doesn't have to go away off to Australia or California, for he can find such places here in Colorado or Utah. But, remember they are not located under the dry ditches that friend Aikin so graphically describes in GLEANINGS (and which every whit is true), but they are located where there is an abundance of alfalfa, and where the canals, ditches, laterals, and waste places are covered with sweet clover, and still it is hard to find a location where from one-third to one-half is not barren desert, and, with the exception of a little early pollen, would furnish no more bee-pasture than a barn-floor. Utah Co., Utah, is reported to have 30,000 colonies of bees, and you would be surprised to see what a small portion of the county is under water.

In the little city of Payson (in Utah Co.) and its suburbs, and on less than two miles square, are 3000 colonies of bees. My friend Thos. M. Todd owns 200 of the 3000. Last year his yield per colony was over 200 lbs. of extracted honey. This season he procured 140 lbs. per colony, one-fourth comb honey.

On one block in the town of Benjamin, three miles from Payson, are 500 colonies; and clustered close around him are as many more. The 500 situated on the one block gave this year 1600 24-lb. cases of comb honey. The Utah fellows call their honey lucerne (their name for alfalfa); but in my opinion, if the sweet clover were taken away they would have to keep fewer bees or move them farther apart.

Now, if it takes more than you and Dr. M. to believe the above I wish to introduce to you my good Presbyterian friend Mr. Thos. M. Todd, of Payson, Utah, who will act as sponsor for the above figures. I see I used the term "under water." This means the lands that are irrigated. The lands that are above water are desert, and furnish no surplus honey as a rule.

Grand Junction, Col., Jan. 6.

* * *

CALIFORNIA FOR CONSUMPTIVES.

Not the Most Favorable Region in the World for that Disease; Some Interesting Facts for Health-seekers.

BY A. NORTON.

Friend Root:—I feel like adding a little correction, if it may be so called, to what Mr. Hambaugh says about the healthfulness of California, especially for such things as a tendency to colds and lung troubles. I say, for a *tendency* thereto; for, when the trouble has once developed into the confirmed dominance of bacilli, I believe it will take a higher power than climate to heal. But it is easy to be mistaken, and mislead, and to think that the whole of a State is just like some portion thereof. This is not the case anywhere, even in California. True, this is a wonderfully mild, soft climate, the whole length and breadth of the State; yet people born here, or for a long time residents here, take consumption, etc., and die the same as elsewhere. I doubt whether Mr. Hambaugh has settled in a really ideal place for lung troubles. I know that experienced and skilled physicians of this section, in prescribing change for such troubles, have not favored it. One requisite for lung troubles is altitude (3000 to 5000 ft., according to the state of the trouble), and another is dryness of air. The coast line of the State doesn't furnish either (see exceptions later). True, the California coast is better than the Atlantic coast or the Mississippi Valley, because evener and dryer. For instance, in summer, in spite of fogs, the air of San Francisco averages only 28 per cent of saturation point, while in New York and Philadelphia it is 75. Hence, those coming from the East, even to the coast, find great relief, at least for a while. That just the change itself may account in part for this, the following example will illustrate:

I knew a young man in Salinas of this (Monterey) county, who was far gone with consumption. Salinas is near the mouth of Salinas River, only ten miles or less from Monterey Bay, and only 50 feet or so above sea-level, with uniform but moist climate. This young man was taken, when life apparently couldn't last much longer, to an inland elevation in the county, of over 2000 ft. altitude, and with dry climate. He improved wonderfully and marvelously, and lived there two years. Then he went into the same decline. He was removed to Denver, Colorado, where the same rapid apparent recovery took place, and was followed in a year or so by the inevitable decline again. He was then brought home to low, moist Salinas again, as all thought, to die speedily. To everybody's surprise, however, he picked right up again as he had with each of the other changes, and finally, after two years, some of it spent in comparative comfort, he died at home.

The location I mentioned in connection with Mr. Hambaugh is, as I take it, in the low land around Los Angeles. I have known doctors to discourage patients from going anywhere there. But all along the Coast Range, especially south of San Francisco, are many dry, sheltered locations with sufficient elevation, and with such delicious, balmy air as simply can not be described. These regions are generally well covered with bee-pasturage, and make fine locations for apiaries. I remember one case of a young man who came to San Buenaventura with consumption in 1884, hardly hoping to recover. He was weak and languid. But in a few weeks he was working in one of Mr. Wilkin's mountain apiaries, getting stronger continually. He got his health again, married, and, so far as I know, is still alive and hearty. I know of a similar case in the mountains of Santa Cruz Co.

The Sierra Nevadas furnish perfect summer conditions; but the winters there are too severe and trying. The southern portion of that range is, of course, more favorable than the northern part. Nevada, Utah, and Colorado are not to be excelled for summer residence (only four or five months), and are cold during winter, with much danger from pneumonia. Southern and Central Arizona, though not so elevated, are very dry and generally equable, winter and summer, with alfalfa regions that make good locating-points for apiarists.

But if a person with weak lungs chooses the coast mountains of the southern half of California (south of San Francisco, in other words), he will be pretty sure to find plenty of delightful localities to choose from. He could find fine climate in abundance north of San Francisco, but would not be always sure to find good bee-pasturage. One or more ranges inland of the many parallel ranges are always safest.

Monterey, Cal.

[Partially in corroboration of what friend Norton has said, I might mention that one of our townsmen, far gone with consumption, went to California. Within a month after arrival he experienced great relief, and in two years he seemed nearly cured; but in about a year more the disease came back, and he finally died. An uncle of mine, Mr. Marshall S. Root, contracted the disease on the coast. The doctors all advised him to leave California and go back to his own home here in Ohio, where it was colder. He did so, and the change was beneficial for a time; but after he became acclimated, the disease began again and he finally died. It is true that change, no matter where one goes, often gives relief. —ED.]

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

COMB AND EXTRACTED HONEY; STRONG COLONIES FOR EXTRACTING, AND NO INCREASE; HOW TO PRODUCE COMB HONEY, AND INCREASE.

Question.—I have 110 colonies of bees, and intend to work for both comb and extracted honey the coming season. I allow natural swarming, and have enough extra brood-combs on hand to fill 75 eight-frame hives. Forty of the colonies are in ten-frame hives, and 35 of these will be used for extracted honey. They will have to build a good part of the combs to be used in extracting from foundation, as I use combs only 5½ inches deep in the extracting-supers. Our surplus comes from white clover, which begins to yield honey about June 10th; then basswood, which blossoms about July 3d, lasting about ten days; and, lastly, from goldenrod, which begins to yield honey the latter part of August, and continues nearly through September. My principal trouble has been swarming during the honey-flow, this interrupting work in the supers. Supposing the above to be your case, how would you handle the bees so as to secure the best results? An answer in GLEANINGS would be esteemed a favor.

Answer.—In the first place, I should not expect to "allow" many, if any, natural swarms from the colonies that were worked for extracted honey; for I believe more extracted honey can be obtained where the colonies have no desire to swarm than can be by any plan which inclines the bees to swarm. Mr. Quinby told us years ago, that, if a colony were given from 5000 to 6000 cubic inches for a hive, and this space were filled with comb, such a colony would not be liable to swarm; and in all of my operations with bees I have found Quinby to be very nearly correct on this point, and especially so if the honey is extracted from the combs not occupied with brood as soon as the most of it is sealed over.

Now let me digress a little. Why do you wish to use combs for extracting purposes, only 5½ inches deep? I have never been able to see any particular reason for using combs of any other than the same depth as the brood-frames, for extracting purposes. I know that a few of our advanced bee-keepers do use combs in the extracting-super, of a different size from those in the brood-chamber; but what few reasons for such a course have been given seemed illogical when viewed from my standpoint. Therefore, as you have asked me how I would handle those bees to secure the *best* results I can only reply that I would use those extra combs you say you have on hand on those 35 colonies I expected to work for extracted honey; and if the honey is extracted from them as soon as it is ripe, this will do away with all swarming on the part of the colonies worked for extracted honey, and, in my opinion, secure the best *possible* results from them. But I can tell you how you or any one else can prove whether Doolittle or any other writer is right or wrong when his teaching is applied to your wants or locality. Just try the plan advocated, on a part of the colonies, using your former plans with the rest, and this will prove the matter to your entire satisfaction. If the *new* plan proves good, then prepare to work the whole number of colonies that way. If it proves not so good as the plan or plans you have been using, then drop it, adhering to your old plans till you strike on something better. By doing this you may go a little slower, but you will go much more surely.

Now about that part worked for comb honey. I should certainly try a part of the colonies with the plan I gave in my department in GLEANINGS for January 1, 1898, unless I were anxious for increase, and I would try two or three colonies in this way, did I wish increase, so as to "get my hand in" against some time when I had all the bees I wished to keep. Then I would try another part in the following way:

Take a hive having eight of those empty combs in it and place it upon the stand of any populous colony which you have reason to think will swarm in a few days, when the sections are to be taken off and placed upon this hive of empty comb. Now shake and brush *all* the bees off their combs down in front of the prepared hive, into which they will run as fast as shaken. After the combs are out, shake all the bees out of the hive, if any adhere to the sides of it, so that all of the bees from the populous colony will be in the new hive together, thus having the queen, bees, partly filled sections, etc., so as to make a colony with no desire to swarm, ready for business at once. Previous to this, nuclei should have been started, so you will have plenty of laying queens to use as you may need them. Now take all the combs from which the bees were brushed, except one, and arrange them in the hive, carrying it to the stand of another populous colony. Next take the comb of brood which was left out and go to one of the nuclei, taking out the frame having the laying queen on it, and put the comb of brood in its place. Take the frame, bees, queen, and all, and set it in the place left vacant for it when arranging the combs of brood. Put on sections, and, when all is complete, move the populous colony to a new stand and set the prepared hive in its place, doing this work at some time when the bees are flying briskly. Thus we have another colony with no desire to swarm (through our manipulation and its young queen), the same having a laying queen, and enough of her own bees to protect her; combs full of brood, and all of the bees from the removed colony which have flown to any amount, which makes a swarm ready to go to work in the sections in a few days. The removed colony has simply lost the field bees, so as to stop the swarming impulse, and in a week will be ready for the sections again, thus making three colonies from two old ones, all of which are in the best shape to take advantage of the honey-flow. If the harvest of honey is long drawn out, the colony last removed may swarm toward the close of said harvest; but with me, such is rarely the case. Should you wish more increase than the one colony from two, the nuclei can be built up to full colonies before the season closes. Or if no increase more than this is desired, then the nuclei can be used for the purpose of building frames of nice worker comb, which they will do with little or no cost, save the putting in and taking out of the frames as soon as they get another laying queen.

In bee-keeping it is always well to have two or three "strings to your bow;" and by thus having these different plans of working you can secure nearly as much fun as did the drummer with his *one* "string" fixed thus, as related by himself:

"Take a spool of white basting cotton. Drop it into your inside coat pocket, and, threading a needle with it, pass it up through the shoulder of your coat. Leave the end an inch or so long on the outside of your coat, and take off the needle. Four persons out of five will try to pick that thread off your shoulder as soon as they see it, and will pull on the spool until it actually does seem as though your clothes are all bastings, and that they are unraveling not only your clothes, but yourself. Fixed as above, I was at a theater in Boston on one occasion. It was in the most interesting and pathetic portion of the play. Everybody was rapt. I was sitting bolt upright, and didn't know or care to know a soul around me, when suddenly I felt something tugging at the basting cotton, that I myself had clean forgotten. I didn't say a word, and did not move. Foot by foot it unrolled. Half glancing around, I saw a woman — a total stranger — yanking at the thread. Her face was scarlet. She had pulled out about ten yards, and was now hauling in hand over hand. She didn't care to stop, because she had decorated my back and the whole aisle with basting cotton. She hardly dared to go ahead, for she did not know what portion of my domestic interior economy she was trifling with. Rip! rip! went the thread. Hand over hand she yanked it in. The aisle was full of it. 'For Heaven's sake! will it never end?' said she above her breath. I sat perfectly still and ran the spool while she pulled. How I wanted to yell! I never was half so tickled before in my life. The whole section of the house soon got on to it. They didn't know whether to laugh at me or her, but sat and looked on amazed at the spectacle. At last the stranger gave one frantic pull and yanked out about eleven yards in one bunch; and as the cotton got twisted around her watch chain, over her eyeglasses, in her hair, and filled her lap, I turned around and, producing the spool from my pocket, said, 'I am sorry I misled you. You see I have about 124 yards left, but I presume that you don't care for any more to-night. I am honestly sorry, but I can't help smiling.' The woman was a modest sort of lady in appearance. Her face was as red as fire, even to her ears. She looked at me and then at the spool. She changed color once or twice; and when the crowd caught on, the laughter was so uproarious that I almost repented me that I had done the thing, because it placed both of us in a rather ludicrous light."

HEADS OF GRAIN FROM DIFFERENT FIELDS

TO PAINT HIVES TO LOOK LIKE MARBLE.

Paint two coats of white paint in the usual way. While the second coat is fresh, hang up hive or super. Take a coal-oil lamp, light it, turn flame up so it will smoke, move it around so the smoke strikes the paint; use no flue. If carefully done it will be very pretty and will not show dinginess like white paint.

Anderson, Ind. J. A. MINNICK.

VENTILATION IN WINTER; CATTLE OR BOX CAR FOR MOVING BEES.

1. My bees are in chaff hives; how much ventilation do they need, if weather is cool, as it is likely to be at that time of year?

2. Which is best for shipping bees—an open stock-car or box car? I ask this question because the open car is advocated by some; but I suppose they have reference to shipping in hot weather.

3. If ventilation is given the full size of the hive at top of brood-frames, and it should change to colder in transit, would not the brood be likely to become chilled, even though it were not cold enough to freeze?

WM. M. WHITNEY.

Garlo, Ohio, Feb. 15.

[1. Bees in chaff hives will need no more ventilation than is afforded by a full-width entrance that is not clogged up with dead bees.

2. If the weather is warm we would advise an open stock-car; if it is cold, a box car.

3. If the temperature outside is 60 or 65 there is not any danger of the brood being chilled. If it should run down to 50 outside, there might be some danger provided the colonies are not strong; otherwise, no danger.—ED.]

CANNING FRUIT IN HONEY.

You should add to the honey-leaflet, directions for canning fruit with honey. Last fall I canned peaches with clover honey, and they are the most delicious peaches I ever ate. I have canned apples and quinces, and they are just as good. Put fruit in tight-covered kettle or pan; set it in the oven; cook until tender; then add honey enough to sweeten to taste; bring to a boil, and can immediately. Do not cook after putting in honey; just let it boil up. Add no water or other liquid. One-fourth pound of honey to one pound of greenings or Newtown pippin apples is about right. E. D. HOWELL.

New Hampton, N. Y.

[I wish our bee-keepers' wives would tell us more about canning fruit in honey—why it is as good as or better than cane sugar; how much honey, *i. e.*, the requisite proportion to a gallon of fruit. Then while we are about it let us pass the word around the world, and keep on passing it as long as we are bee-keepers and have respect for our stomachs, that honey is a much more wholesome sweet than cane sugar.—ED.]

GINGER COOKIES.

One cup granulated sugar; 2 cups honey; ⅘ cup shortening; 1½ cups sour milk; 1 tablespoonful of soda; 1 tablespoonful of ginger; 1 teaspoonful of salt, and enough flour to roll out good. Put the sugar, honey, and shortening on the stove and stir till all is melted together; then take off and add milk and all the other ingredients. A. C. L.

FOR THE T SUPER.

After reading Mr. I. S. Tilt's article, p. 207, and your note at the foot of it, here I am raising my hand on the editor's side. Yes, sir: I tried the two arrangements side by side for a few years; but of late I have bought only the T-super arrangement, and this winter have made all of my section-holder supers to take the T tins. A. ROORDA.

DeMotte, Ind., March 20.

[Instead of being on my side of the fence, I take it from what you say that you are on the doctor's side. At all events, here is another man who is on *my* side. Listen to what he says:—ED.]

THE T SUPER GETS ANOTHER BLACK EYE; IN FAVOR OF THE 10-FRAME SIZE OF HIVE.

I notice on page 208 you wish a "show of hands" from those who have used T tins and section-holders. I expect to have to plead guilty as one of the fellows spoken of on page 214, who has tried nearly every new thing gotten out—by the Roots at least—but in a small way, and without much extra expense. In the end I consider my experiments have greatly benefited me. My latest tests have been with large and small 8, 10, and 12 frame hives and the T's. If you were to make me a present of 100 complete T supers I would not use them so long as I could get wide frames. I prefer the wide frames to any other arrangement for comb honey, except, perhaps, the Danzy super with or without the fence which I tried last season, and believe will prove superior—in my hands at least—to any other arrangement now in the market.

In regard to the large and small hives, after using the three sizes mentioned above for the last three years I have settled on the ten-frame as the best for my locality. I believe locality has much to do in selecting the proper size. M. D. ANDES.

Bristol, Tenn., March 25.

BLACK VS. ITALIAN BEES; A GOOD SHOWING FOR THE ITALIANS.

I had two swarms of black bees three years, and gave them each one full hive and one super, which were filled with honey each year. They have never cast a swarm. Now listen to the yellow bees. Last year I had four colonies, and gave them the same treatment I gave the blacks—plenty of room; two of them did *not* swarm, and gave me lots of nice honey. The other two *did* swarm three times each, and gave *no* surplus honey. They were all in fine condition. L. E. BURLEY.

Exeter, N. H.

[If you had tested the two kinds of bees both the same season, the result would have been a little more exact. However, I must confess that I want to believe that the Italians are a little bit ahead generally. There will be something interesting about this same subject in this issue, from the pen of O. O. Poppleton. —ED.]

VENTILATION FROM BETWEEN SUPER AND HIVE.

I see there is some discussion in GLEANINGS in regard to the use of blocks under the hive, to admit of ventilation in warm weather; but I consider it useless labor, as I have been ventilating about 150 colonies for comb honey for four or five years, by placing the super on the hive so as to admit about ⅜ to ½ inch space on top of the hive right over the end-bars, clear across the hive, which I find ample ventilation; and as the opening is above the entrance the ventilation is more direct, and the bees can also use it as an upper entrance, which has proved to do no harm when the space is closed later in the season.

Centreville, O. G. W. LAWSON.

[Yes, I know you can get ventilation by opening the top of the hive; but I will bet a cooky, friend Lawson, that you would secure riper honey and better-filled sections, and have what is of considerable importance, more fragile comb, if you secure the ventilation by a larger or deeper entrance. In order to carry on comb-building, ripen honey, and cap the cells, the bees must have the requisite temperature; and letting draughts of air strike the top of the sections, as it will do at times, does not bring about the most favorable conditions, certainly, for comb-building, to my way of thinking.—ED.]

HOW YELLOW-JACKETS TEAR OPEN BEES.

Last autumn, 1897, I noticed yellow-jackets alighting at the entrance of a hive. Not only did they alight without molestation or challenge, but made their way fearlessly into the hive. Investigation revealed the fact that, in several hives, there were a few yellow-jackets, though there was no evidence of harm being done by them. Some of the hives were cleared of all I saw. In the spring I shall carefully inspect all hives for evidences of their presence.

On melon rinds last autumn I often saw bees killed by these pests. A jacket would grab a bee by the side, and, quick as a wink, tear a hole into its honey-sac, and leisurely proceed to devour its contents. Whether any of this is new to the fraternity, I do not know. I give it for what it may be worth.

Bees are wintering nicely. Of 46 colonies in fall, all were alive a few days ago.

Pueblo, Col. O. L. REED.

THE GOLDEN SECTION-CLEANER; IS IT PATENTABLE? HOW TO MAKE THE SAND-BELT.

I see on page 130 what Bro. Golden calls a section-cleaner, and that he says he is going to have it protected by a patent. Well, that sounds to me pretty nearly as bad as the story I have just told you of the bees in this part of Florida. If Bro. Golden will use a band on his machine, made of several thicknesses of coarse muslin, and then put a good coat of glue on the outside of the band, and then just sprinkle the band with a good coat of sand, of the grade or fineness he wishes his work done on the sections, he will have just the proper thing for cleaning sections. That is the way all the sandpapering and polishing of all the fork, shovel, and other kind of handles have been done, to my knowledge, for over 15 years; and he will find, when he endeavors to obtain a patent on that, that he is not the inventor of that process at all, by several years, and I do not think I am making a mistake when I say that, if you will try the same plan on your machine, on p. 186, you will find out you do not need any sandpaper on your wheel at all; just fasten on a few hicknesses of coarse muslin; sand it, and let it dry, and that will last much longer than sandpaper, and will make the dirt more than fly.

W. C. GREEN.

Lakeland, Fla., Mar. 5.

KEEPING BEES ON SHARES; A NEW PLAN OF DIVISION.

The question is asked as to a fair rental for bees. What do you think of the following? The party of the first part gives the bees, hives and fixtures, with the use of bee pasture, to the party of the second part, who thereupon assumes all future cost for the term of years for which the bees are rented out, for hives, honey-boxes, foundation, and, in fact, every thing that may be needed in the proper care of a well-ordered apiary. The party of the second part gives to the party of the first part a tenth of all the surplus honey the bees may gather, and a tenth of the increase in bees. The honey is to be in merchantable shape, delivered at the apiary, and the bees to be in good substantial hives; and the party of the second part gives back the original stock upon the expiration of the lease, except in case of foul brood or loss of bees from some unavoidable cause.

DAMPENING SECTIONS ON THE GRASS.

Dr. Miller is somewhat worked up over my idea of putting sections on the grass under a tree to dampen them, and says the plan is too slow for him. Well, we are not all as big fish as Dr. Miller, and do not need so much water to swim in. There is not a little complaint about foundation falling down in the sections, especially when the prepared sections are put on too soon, and the bees are blamed with pulling down the foundation. Now, I happen to know that, when the sections are never wet from the factory to the hive, there is little or no trouble of that kind.

SMOKER FUEL.

If too much has not been said already about smokers and smoker fuel I would say that, instead of cutting all the wood for the smoker four or five inches long, as many advise, from one-fourth to one-third of the wood should be cut two inches long. By putting a little of this short wood into the smoker first, and then, when that is well on fire, putting in the longer wood, the fire will burn better, the smoker will work better, and the fire will be hot enough so that there will be no need of cleaning the smoker out; for if the fire is hot enough it will keep the smoker clean after the first few fires. I use dead wood—oak and elm mostly, but I like good sound wood also pretty well. WM. H. EAGERTY.

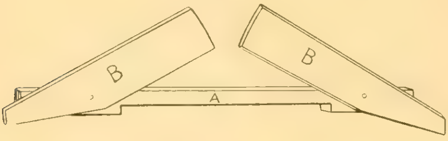
Cuba, Kan.

[Your scheme of dividing the profits might be a very fair one; but there is one point you do not clearly cover. Suppose, for instance, that all or half the bees die; who will share the loss, and in what proportion? I take it that, in this proposition, the man who operates the bees would be expected to assume such loss, although an exception would be made in the case of foul brood and other *unavoidable* troubles.—ED.]

CONTRACTING DEEP ENTRANCES; HOW E. P. CHURCHILL DOES IT.

Friend Root:—Interested as I am in hives, etc., I have used all kinds of entrances; but the one I send you for the new entrance is best of all. We surely need to govern a hive-door as much as a building-door; and this is simple and cheap and good for chaff hives, as well, using an inside piece so as to slip into the entrance. E. P. CHURCHILL.

Hallowell, Me., Jan. 19.



[The strip A, at its widest part, is as wide as the entrance, and as long. I take it that friend Churchill slips this slat, at the close of the honey-flow, into the entrance; then if robbers get to nosing round the narrow entrance under A, it is further contracted by dropping the gates B B, one or both. But, hold on! It is possible that strip A represents the hive-front, and the slot under it the entrance. B B would then be fastened to the front of the hive permanently, and would be dropped down close to the entrance, separately or in pairs, as the case might warrant.

As for entrance-strips, I think I would use something simpler than any thing that has yet been proposed; namely, a strip of wood as long as the entrance, and a bee-space narrower than its width; or perhaps this would be better: a strip of wood as wide as the entrance, and an inch shorter than its length. With the last named I would secure different widths of entrances by sliding it catacornerwise, regulating the angle according to the width of entrance desired.—ED.]

THE ADVANTAGE OF WIDE AND DEEP ENTRANCES; FROM THE STANDPOINT OF ONE WHO HAS GIVEN THEM A THOROUGH TRIAL; THE RANSON BOTTOM-BOARD.

Mr. Editor:—You intimate in your footnote, page 182, that you would have me tell your readers why the deep entrance is better than the shallow one. Well, first, thanking you for a generous footnote, I would state that the deep entrance is better for three reasons: 1. The bees want it; 2. It contributes to their comfort; 3. The results in surplus honey are better set forth as follows: The bees told by their actions they wanted deeper entrances when I found them gnawing and biting the top of small entrances, trying to get room for the pile of *idle* bees to get to work; 4. It contributed to their comfort. This they indicated by their quietness and active work when colonies with small entrances to the hives would in hot weather roar like an approaching storm, and hang idle on the front of the hive; also, the results in surplus honey are better, from the fact that more workers keep at work, and less idling and piling out in hot weather. Now a word about the Ranson bottom-board.

While I have no doubt that it will soon be as standard as the L. frame and Dovetailed hive, and I think also that many things of less merit are patented, still there is no patent on this, and all manufacturers are at liberty to make and all bee-keepers to use it; so I turn it over to The A. I. Root Co. as its guardian, with the hope that they see to it that some *other fellow* doesn't take out a patent on it so that others can't use it at will. If you please, Mr. Editor, don't let Dr. Miller call me bad because I did not tell about it sooner.

New River, Va. W. B. RANSON.

[I consider this strong testimony in favor of the deep entrance; and while I have not had the opportunity for observation that friend Ranson has, yet the experience I have had with similar bottom-boards leads me to swallow every word he says as simple truth. As to his bottom-board, I believe he has a good one. Lest our readers may have forgotten its construction as given away back on page 182, I would state that it is so made that the front bottom end of the hive-body just over the entrance is one inch from the floor-board, while the back bottom edge is ¼ inch. This makes an entrance one inch deep by the width of the hive. It also has the additional advantage that the bees are required to crawl either to the back end or the sides of the hive with their loads of honey. The effect is to cause them to fill the ends and outsides of the supers perhaps as well as the center. I say *perhaps*, because I do not know positively. Theoretically this would be the result, and I know of two or three who have reported that it is true in practice.

Friend Ranson speaks of one point — that, with the narrow entrances, the bees, in order to get sufficient ventilation, had "to roar like an approaching storm, and hang idle on the front of the hive," while there was "quietness and active work" in those hives with the large entrances. This is a fact, or what I, at least, believe to be such, that the brethren may think on a little bit; and not only think upon it, but actually prove its truth or falsity this summer.—Ed.]

DEEP ENTRANCE ALL RIGHT; KEEP BEES IN THE HIVES AT WORK.

Your hive-stand, with slanting 5-inch alighting-board and ⅞-inch entrance, will meet the approval of all advanced bee-keepers, I believe. About ten years ago I was using practically the same thing with 20 hives and 20 Simplicities with the regular alighting-boards, side by side. The heavily laden bees returning from the field would alight on the broad board, take a rest, and go into the hive with clean feet.

With the Simplicity alighting-board the bees would sometimes fall short and land on the ground, climb up on a blade of grass, only to tumble back and crawl to the hive and stain the cappings on the sections, because there was a difference in the color of the cappings, and I could see no other cause than dirty feet, as the ground was sandy loam, and I kept it cut close with a mower. The ⅞ entrance certainly keeps the bees in their hives at work better than the ⅜. I kept my S. hives on stones, 4 small ones under each corner of a hive. W. J. Russell.

Philmont, N. Y.

[It was in view of the facts set forth in your letter—that is, the manner in which the bee alights when coming heavily laden—that we constructed our hive-stand just as we did, with slanting front. In the days of the old Simplicity hive, when Novice used to write about bees, he often spoke about the fact that bees would persist in coming into the hives with muddy feet and soiling the nice white surfaces of the combs. In view of what you have said, I believe that the trouble was not because the bees were inclined to be untidy, but because they *could not help* getting their feet muddy on account of the peculiar construction of the entrance. The old Simplicity body used to project over the bottom-board. This made it necessary for the bees to crawl on the *ground under* the front of the hive; and hence their muddy or soiled feet.—Ed.]

THE NEW YORK STATE ASSOCIATION OF BEE-KEEPERS' SOCIETIES.

Friend Root:—For some reason the call for a meeting of the representatives of the bee-keepers' societies of New York, which was sent to both Gleanings and the *A. B. J.*, did not appear, so we did not have as large an attendance as we could have wished at Geneva, March 16; but there were enough societies represented to fully warrant us in going ahead with the State Association. The meeting was called to order by F. E. Emmons, and L. B. Smith was elected secretary. After a thorough discussion of the pros and cons of the case it was decided to organize a society to be called "The New York State Association of Bee keepers' Societies."

W. F. Marks, of Chapinville, was elected president; Fred S. Emmons, Fayette, Vice-president; Harry S. Howe, West Groton, Sec. and Treasurer. The next meeting is to be held in Geneva, N. Y., on the second Wednesday in January, 1899. Harry S. Howe.

West Groton, N. Y., Mar. 20.

[I have already referred to this same society; and I feel sure that the men who are back of it are bound to make it boom. Gleanings offers its space to the association to use as it sees fit, providing, of course, it does not want "the earth and the fullness thereof."

We regret the omission of the call in question. It was on our copy-hook, but became covered up with so much paper over it that our printers did not find it till too late.—Ed.]

BERMUDA GRASS, ETC.

I've been very much interested in your voyage to Bermuda. It has a pleasant sound to me, for the past winter I've been interested in planting Bermuda grass. I've heard that the streets of Fort Myers, Fla., are all in its thick sod, which bears up the heavy wheels of loaded wagons. It has the thickest sod of any grass I ever saw. A great deal of this grass has been planted in the streets of St. Andrews during the past winter. I was in hopes that you had seen this grass on the island of Bermuda, and would tell us about it.

We sail much on the bay, and often out on the Gulf of Mexico. At times the Gulf acts like an untamed broncho—rears, plunges, and backs, as if trying to throw us off. When she is at these antics, we feel a queer sensation; and I lie down in the boat or on the prow, or stand up, with my arm around the mast, facing the wind, all the while telling myself, "You shan't be sick." When one turns pale, the laugh goes round, saying, "You are getting white around the gills."

Bees are holding high carnival here now. There are but few of them, as last summer's severe drouth destroyed many. Their owners say "the worms eat them up." Fruit-trees are blooming, and the ti ti is white with its lovely racemes, redolent of perfume. Dooryards are gay with phlox drummondi, exhibiting all the colors of the rainbow. Bees appear to work much on dew-berries. They run over the ground, forming a mat; and it's now white with many winged visitors.

Mrs. L. Harrison.

St. Andrews Bay, Fla., March 22.

[Yes, I saw plenty of Bermuda grass on the island; but, strange to tell, it does not seem to grow there with the luxuriance it does in many places in Florida, particularly Fort Myers. I was very pleasantly impressed with the beautiful green grass in that locality, especially right in the streets, as you say. I got up very early in the morning, when every thing was wet with dew, and the grassy lawns and streets and fields and knolls made me feel as if I should like to live in Fort Myers. My impression is that Bermuda grass thrives best in particular localities, and it may be utilized for many purposes besides being ornamental. I would advise testing it in different places, especially in tropical regions, where it is hard work to get a sod with other kinds of grasses. —A. I. R.]

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

C. A. A., N. Y.—You need have no fear about sparrows. They are almost as thick as the bees in our vicinity, and we never knew them in any way to molest the bees.

E. G., Pa.—The best way to utilize queen from queen-cells removed from hives to prevent swarming, is to put the cells in nuclei or queenless colonies, and allow them to hatch.

T. A. M., N. J.—I regret to inform you that bees do soil clothes in the way you speak of. The only way to do is to make the matter satisfactory with your neighbors in some way. If you sweeten them up with a few sections or bottles of honey you will probably have no further trouble.

J. B., Pa.—Your location would be excellent for keeping bees. Certainly the proximity to water would do no harm, and the mountain on the other side would have a tendency to prolong the season. Bees are very often near water without the least particle of trouble. I do not see why the honey should be dusty from the smoke of frequently shifting switching-engines. Better leave your bees where it is most convenient to attend to them.

W. H. B., Utah.—The problem nowadays is to prevent swarming, not to encourage it. If you want your bees to swarm, stimulate them by feeding, as recommended under "Feeders" and "Feeding," on page 28 of catalog mailed you. Get the colony fairly boiling over with bees, and then contract the brood-nest, and you will have swarming with a vengeance.

E. P. S., Pa.—There will be no trouble in putting entrance-guards on the hives in the manner you describe in your letter. When a swarm tries to issue, and the bees have returned, you will need to change the inside conditions of the hive; that is, give them a new hive with frames of foundation with their old super, if they had one, on the old stand. The parent hive, with brood and a few bees, remove to a new location. Of course, the zinc must not be used at the entrance when you desire a young queen to be fertilized. The purpose of the perforated metal is to prevent swarms from leaving, and to keep undesirable drones from flying. We use entrance-guards every summer in our out-yard, and carry out the plan laid down under "Swarming," in our catalog.

W. T. S., Wis.—At the approach of the honey-flow put on one super. When this is partly filled out, put another one under it. If the flow still continues to be good, and the first super is about completed, raise the two up and put still another under; but ordinarily it will be better to put the third super on top, and allow the bees to complete the combs in the first super, or the one that is now in the middle. As the season wanes, it is always advisable to put the extra super on top of the pile. Hives may be used as soon as the paint is thoroughly dry. If they stand two days after being painted, that ought to be sufficient, ordinarily. Do not use too much drier in the paint. A paint that dries slowly will weather better than one that dries too soon.

I shall be glad to hear from you regarding the relative merits of top and bottom ventilation in the cellar.

S. E. H., So. Dak.—I see no reason why bee-keeping could not be made to pay in a region where there are hundreds of acres of alfalfa and clover; but if you already have a good position where you are I would not advise you to leave it just yet. You had better correspond with parties in the vicinity, especially bee-keepers. The nearest names we can give you, in South Dakota, are: J. H. Chapin, Winfred; Daniel Danielson, Clarkson; S. R. Hillman, Canova; W. H. Hubbard, Canton; George H. Jones, Spearfish.

While we should be very glad indeed to get your trade, it is only fair and honest to state here that the business of bee-keeping is very uncertain. Some years it pays well, and others it is a source of expense; but it is more certain in alfalfa regions than anywhere else in the world, especially if the alfalfa is in the region of artificial irrigation, and the water-supply is certain. If you have had experience, perhaps you could take fifty colonies and make a start, and make a success. We would suggest that you get a leave of absence for a short time, with the privilege of taking your old position up again. Look over the field, and inquire of local bee-keepers how the seasons are. If you decide to enter into the business, I shall be glad to hear from you further.

EDITORIAL
BY
E. R. ROOT

WE have just received word from Mr. H. Stevenson, of Innishannon, Ireland, to the effect that, after three years of waiting, he has coaxed the Postmaster-General of Great Britain to permit the transit of queens to and from the British Isles. To make assurance doubly sure he wrote to New York, and received reply to the effect that "notification was in due course sent to the U. S. Postoffice Department," and that "live bees could now be forwarded to and from Great Britain by post." For years we have been unable to send any queen-bees to England, and we are sure this new ruling will prove to be a great boon to bee-keepers, not only in in England, but the whole world, in fact.

THE LANGSTROTH-MONUMENT FUND.

WE copy the following from the *American Bee Journal* for March 31:

> Mr. P. E. Shear, of Ulster Co., N. Y., sent 50 cents on the Langstroth-monument fund. We are inclined to think that, before bee-keepers will be satisfied to let this matter rest, they will want to see at least $1000 put into a monument to mark the resting-place of their beloved Langstroth. Why wouldn't it be a good plan for the large manufacturers of hives to contribute—oh! say about a couple hundred dollars each? Their prosperous business is practically the result of Langstroth's invention; and as bee-keepers are helping to support the manufacturers, indirectly it would be the bee-keepers' tribute to the memory of Langstroth.

Personally it seems as though our good friend York had got the figures a little high; but, never mind; if the bee-keepers of the world think we should invest $1000 in this direction, The A. I. Root Co. will try to do its part. We therefore raise our contributions from $10.00 up to $25.00. If the other supply-dealers feel like contributing liberally also, we will increase our subscription to $50.00. And, by the way, is it not about time that somebody should set to work to give us suggestions for print as to what said monument should be like? Let us not only have the form, shape, and size, but a suggestion in the way of an inscription.—A. I. R.

> *The A. I. Root Co.*—I believe you have a credit for me on your books. Will you extract one dollar from the amount, and turn it over to the Langstroth-monument fund? It seems to me that a monument to the value of a thousand dollars should be erected to the memory of one who has done so much for the bee-keeping interests of the world. Every bee-keeper should be proud to have a hand in such a work.
>
> Los Angeles, Cal. J. H. MARTIN.

"STOP MY GLEANINGS."

AS a rule, when anybody complains of his paper, and wants it stopped, we try to overcome the difficulty and have our friend continue with us; but I am afraid we shall have to give it up this time. Read the letter below:

> *Mr. A. I. Root:*—I must write you a few lines in regard to GLEANINGS. When my time expires, please stop it. The editor has refused to answer the question about honey mead, how it was made, and I was willing to pay the expense. But I was cut off like a "bum;" but my money must get what I want. If it is not from one man it will be from another. I hope I shall find another good bee-paper—at least, I shall try. I started in the bee business in 1890, with two colonies, and I have to-day 200. I don't think I shall do without any bee-paper, but I will surely do without GLEANINGS. M. DENTLER.
>
> Taylor, Texas, March 26.

You see, our friend wanted us to print a recipe for making mead or metheglin (both of which are intoxicating drinks) from honey. Now, I think it must have been either John or Ernest who told him we could not conscientiously publish any such recipe, nor tell our readers how to make intoxicating drinks with the product of their hives. I do not think that either of the boys consulted me about it, but I am glad they took the stand they did. There is one thing that gives us a grain of comfort. The writer says, toward the close of his letter, that he hopes he will find *another* good bee-paper. He acknowledges here that GLEANINGS is good, even if it does refuse to give the recipe he wants; and I should not be very much surprised if all of the other *good* bee-papers would take the stand that GLEANINGS does. How is it, brother editors?—A. I. R.

SUPPORTING THE BROSIUS BILL; RELIEF FROM GLUCOSE-MIXING PROMISED.

THE following note, received from Bro. Abbott, of the *Busy Bee*, in reference to our item on page 269, will explain itself:

> *Friend Root;*—I see by last GLEANINGS that you are under the impression that there was no change made in the Brosius bill as originally published. The Legislative Committee, to whom the bill was referred, made a great many changes in it, and among the changes was the dropping out of every thing that referred to patent medicines. There will be no lobby of these people at Washington to oppose the bill. We also dropped out the clause which required all manufacturers to register with the Secretary of Agriculture, and pay a fee of $10.00 for the privilege of doing the same. I think that, when the bill is published as it was amended by the committee and adopted by the congress, you will see there will be no trouble in having all honest men unite in urging its passage. We thought it would be better to get a general law covering ordinary food products and drugs, and then hope for future amendments, than it would be to attempt too much, and be forced to contend with the lobby that might be sent there. I am pleased with your editorial remarks, and think that, with the unanimity of sentiment that now prevails with regard to the matter, we may eventually be able to accomplish something. EMERSON T. ABBOTT.
>
> St. Joseph, Mo., April 9.

I am glad to know that the Legislative Committee have left off the patent-medicine clause. I can not see any reason now why all honest people should not unite in urging the passage of this excellent bill. From my standpoint, any one who would oppose it must be in league with food-adulterators. We well know that they will put up pots of money to fight it.

Why, it seems to me that, if this bill can become a law, it will do more than any thing else to reduce the evils resulting from glucose-mixing.

We are now on the track of a party who formerly sold adulterated honey in this State; but since Food Commissioner Blackburn made it almost impossible for adulterated honey to be sold in Ohio, the same chap is now sending his goods into a State where they have not only no food commissioner but no law. Suppose, now, we had a *general* law covering the whole United States. I am rather of the opinion that this same chap would not only crawl into his hole, but would "pull the hole in after him."

PLAIN SECTION—THE OTHER SIDE.

So far the matter that has appeared in GLEANINGS has been favorable to the plain section; but recently we have received two letters from different parties who tried them and did not like them. The particular ground of objection of one party seemed to be that they did not hold enough honey. The other man, years ago, used two-pound sections; but these did not take as well as the smaller sections having bee-ways. This would naturally be expected. I am quite willing to publish reports from those who have tested the plain sections and fences and have found them wanting or unsatisfactory. As I have often said, I do not wish GLEANINGS to give only one side.

The only valid objection that can be urged against the plain section is that it may not, when filled with honey, be as cratable as those with bee-ways. L. A. Aspinwall, of Jackson, Mich., who has tested them thoroughly, mentions this, but he has no trouble providing he takes proper precaution. He goes further by saying that the plain section will obviate the necessity of no-drip cleats, because the edges fitting close all around will prevent the honey from running down between the sections, causing them to stick to the bottom of the cases.

FOUR-BEE-WAY OR OPEN-ALL-AROUND SECTIONS.

SOMETHING like ten years ago there arose quite a furore over the style of section above mentioned. They had bee-ways in the sides as well as in the tops and bottoms, and many were the thousands that we turned out of this style, and sent them abroad over the land and across the ocean. There seemed to be a general verdict at that time, so far as I can remember, that the continuous passageways from side to side resulted in a better filling of the comb. At the Columbus Centennial in 1888, and later on at the World's Fair in Chicago, there was exhibited comb honey in open-all-around sections. In both instances my attention was called to the better filling of the comb. At various times since, reports from bee-keepers from different parts of the country have testified to the same thing.

Well, now, the question naturally arises, "Why didn't these sections push the others out of the market?" In the first place, they were awkward to get in and out of the supers. Those naughty jutty corners would stick and catch. Then, again, many thought it necessary to use tin separators having transverse slots coming directly opposite these side openings in the sections, which of course made an extra expense. Still again, these projecting corners had a fashion of splitting off; and, lastly, supply-dealers nowhere pushed them to the front. This last, possibly, may have had more to do with their waning popularity than any thing else.

We did not think of it at the time, but it occurs to me now, at least, that these projecting corners would come just at the point that would shut off free communication along the line where bees are inclined to make holes in the corners of the section boxes.

Now, then, don't you see that, with the plain section, one may carry out the principle of free communication from side to side by the use of a fence constructed on the principle of the one shown by J. E. Crane on page 185? Or one may use cleats on his fence as long as the section is tall, and shut off side communication entirely. Or he may use cleats that are an inch or more shorter than the width of the fence, thus securing at one and the same time continuous passageways at the top and bottom of the section, and for half an inch or more up and down on each side. In a word, it seems to me that the plain section may possibly secure the advantages of the open-all-around sections of former days, without their disadvantages.

THE NEW SECTION FOUNDATION—18 FEET TO THE POUND.

WE have sent out a few samples of this to bee-keepers who are especially interested in light-weight foundation, or who might be in position to give the new product an early test. The first letter received came from our friend Bingham, of smoker fame. He writes:

> *Dear Sirs:*—Sample of foundation is received—beautiful indeed. Mr. Dadant seems to think the wall a valuable feature in the process of making. Probably such is the case. We shall have a fair chance to demonstrate whether the wall is of value to the bee-keeper and consumer of honey, as we now have both kinds to use. The wall may be a greater factor in fishbone than thicker bases. At present I believe the evidence favors no wall, even if the base has to be thicker.
>
> Farwell, Mich., April 5. T. F. BINGHAM.

The second came from Mr. O. O. Poppleton, who, after testing the product, has this to say:

> *Mr. E. R. Root:*—I have just examined those specimens of your new foundation sent me to be tested I find the lower half of each sheet has not perceptibly stretched, while the upper half has slightly. The upper *inch* of the sheets has stretched from $\frac{1}{16}$ to ⅛ inch; that is, from 6 to 12 per cent. As almost all the stretch is in this upper inch, it is safe to say the entire sheets of 4 inches long have stretched from $\frac{1}{16}$ to $\frac{3}{16}$ inch. The cells are built out fully ¼ inch, but as yet no honey has been stored in them, there being but little honey coming in just now. This test was made by fastening in top of brood-frames, and inserted between the first and second, and the eighth and ninth combs of a thriving nine-frame colony. I judge the test has been about the same, fully as severe as it would be in a stronger colony in the surplus apartment. It would have been a more reliable test if some of your ordinary thin foundation could have been alternated with this.
>
> Saw palmetto is just coming into bloom. Prospects are favorable for a fair flow. O. O. POPPLETON.
>
> Stuart, Fla., April 9.

We omitted to tell Mr. Poppleton which way to hang the foundation; and, in the absence of any specific instructions, he probably hung it in the brood-frames just as we hang all foundation, with two parallel sides at right angles to the line of support. The construction of the ordinary mill makes this necessary. Mr. Weed, by some experiments he has made, has come to the conclusion that it would be a great advantage to mill the foundation just the other way to, and he has therefore constructed a special mill. He finds that the strength of the sheet is very much greater when hung the "wrong way" according to our preconceived notions, than when hung the right way. Or perhaps I should put it this way. It is possible to so construct a mill that the wall of the foundation will not be broken in milling, as is the case when the foundation comes from the ordinary rolls. Later I shall be able to explain that more fully by a drawing.

Well, he has not only been able to get foundation having a base $\frac{3}{1000}$ inch thick, but he thinks he has made a product that will stand a far greater strain for the same weight.

The test that Mr. Poppleton has already made is very gratifying, in that the bees do not tear down, as we know they are inclined to do with the extra-thin article. If the foundation had been hung the other way, we believe there would have been no sag. But suppose it had been hung just as Mr. Weed designed it to be, it is evident that, if a full sheet will stretch slightly, a half-sheet or starter will stretch imperceptibly. There, now, don't you see we can make an article having bases as thin as thin paper, and the walls be about as heavy as the ordinary thin foundation? This 18-feet-to-the pound wax is lighter than the no-wall article, and, what is more, the *walls will prevent its warping*. I feel satisfied that the walls will never cause the so-called "fishbone." No, Bro. Hutchinson, I've not changed my base on this point.

WARMING A HIVE BY ELECTRICITY.

THAT is what Mr. Weed is doing now with an exeprimental colony. Two wires run down from one of our "mains" into a rheostat coil in the hive. Just over the coiled resistance wires that furnish the heat is a sheet of glass; and under this a thermometer and test sheets of foundation.

When the temperature stands exactly at 100, the bees will work at comb-building; but when it rises to 110 they desert the super entirely. At first, when we lifted up the cushion the bees would fly up and bump their heads against the glass; but now they have become accustomed to it, and keep on minding their own business when we take a "peek."

FOUNDATION EXPERIMENTS.

Electric heat can be varied at the will of the operator, or even be kept at an absolutely uniform point. There, now, don't you see we can carry on experiments in comb-building and testing light-weight foundation right in the early spring, when the nights are cool, and the days, for that matter, are too cool for the bees to fly? As we are running night and day we have current during this time.

This reminds me that 18-feet-to-pound foundation, in this hive, when hung as it should be, and two inches wide, does not sag in the sections, and the bees apparently accept it all right. We will report later.

Later.—Since writing the foregoing we have been trying 11, 13, and 18 foot-to-pound foundation side by side. The first two are our regular thin and extra thin, and the last is the special on Weed's last mill. Greatly to our surprise, in this test at least, the 18-foot article was accepted quicker and drawn out further than either of the other two. We can explain it only on the ground that Mr. Weed has taken nearly all the wax out of the bases and put it in the walls, where our bees want it.

We shall not be able to supply this new article in quantity at present, but we will send out a limited number of packages, six sheets for two cents to pay postage, 2x4 inches, to all those who apply and will promise to test it and report.

COST OF IMPROVEMENTS.

F. L. THOMPSON, in the *American Bee Journal*, thinks the price of honey does not bear a just proportion to the price of supplies; and then he goes on to give the cost of the fence and plain sections. In regard to shipping-cases, while he does not condemn the no-drip style, he would like to have something simpler, something that requires less labor to fix up. I grant that there seems to be much of truth in this. But let us look into the matter from another standpoint.

Although we may not at present seem to be doing it, we are striving to save in every way possible that one big item he refers to—labor—on the part of *the bee-keeper* and cost of supplies. Regarding this, compare prices of a few years ago with those of to-day; sections especially have fallen. The new 18-foot-to-the-lb. foundation will be cheaper than the old 11 and 13 ft. to the lb. article. If plain sections ever get to be popular, it ought to be patent to any man who "can see through a ladder" that they can be made cheaper, and will consequently be sold for less money, than the old-style sections *using more timber, and requiring more labor to make them.* Plain sections, of course, cost a little more than they will in the future, because this is really their first year in the market; i. e., they have been pushed into prominence. It is hardly fair to compare the cost of these things with that of other separators and other sections that have met the competition of the markets for years.

Why, friend T., we are working as fast as we can to avoid the expense of the extra amount of lumber; and, moreover, we hope these new fads are going to *save labor*. The old fads have done so, otherwise they would not be in the market to-day. Friend Thompson would not avoid improvements simply because they cost money at first. Smokers, foundation, and extractors, for instance, were costly improvements.

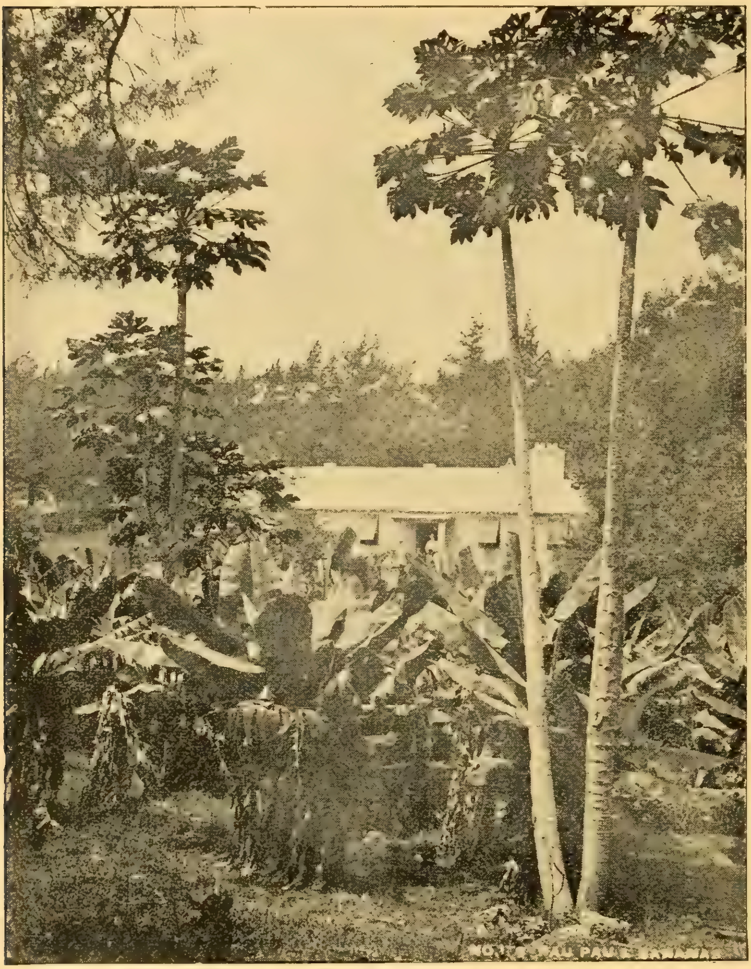
TALL SECTIONS FOR ALL MARKETS.

I THINK it only fair to state that the tall section may not be suitable for all markets. I know it has a big demand in parts of York State, in Washington, Maryland, and in quite a number of the Eastern States. I know it is also regarded with some favor in California. But I am of the opinion that the Chicago market will not tolerate any thing but a square box. Right here I want to correct a misapprehension. One or two seem to have the impression that I claimed that the tall section would be better filled out than the square one. Other conditions being the same, I should not expect a particle of difference.

NOTES OF TRAVEL
BY A. I. ROOT.

BERMUDA AND ITS PRODUCTS.

Most people are more or less familiar with the banana-plant, so I need not take pains to give much of a description. The picture adjoining will tell you something what they are like; and, in fact, most people have seen them in greenhouses. The banana does best on rather low land. It must have a great quantity of some sort of fertilizer. On rich ground, where they are well taken care of, the plants stand as close as from four to six feet apart, each one frequently bearing a stem of fruit that would be about all a man would want to lift. I was somewhat disappointed in not finding ripe yellow bananas growing out in the fields. They are always gathered, or almost always, before they turn yellow, and are hung up in the groceries to ripen. After a plant has borne its fruit it dies down, and another one comes up from the same root, and thus the process goes on. It seems to me that a quarter of an acre in bananas, under high culture, yields about as much nutritious food as any other plant known. I asked some questions about the fertilizer used, and I believe it is mostly stable manure. The decay of the old plant furnishes so much humus that the ground is generally thickly covered with decaying underbrush, or what we might call woods-dirt; but after all, when we think of the enormous weight of fruit taken away each season, we realize that fertility must be furnished from some source. In the winter time the high winds whip the leaves so as to split them to pieces and make the plantation rather unsightly. I once had a banana in a greenhouse, and it was really "a thing of beauty and a joy"—till I set it out on the lawn, and a high wind whipped its beautiful glossy leaves into unsightly carpet-rags I do not know of a prettier thing for a lawn than some of the ornamental varieties of the banana-plant; but one ought to have some arrangement, say in the form of a tent, to set over it when the winds are boisterous. There is another plant that looks very much like a banana, only it is taller. The fruit looks and tastes much the same, and many greatly prefer it. I do not now remember the name of it.



BANANAS AND PAPAYA-TREES GROWING ON THE ISLAND OF BERMUDA.

I have before spoken of the papaya (or melon) tree. It grows wild all over the island. I believe they are seldom cultivated.

Those in the picture are unusually large—that is, the tall ones in the foreground. The greater part of them are not too high to reach the fruit conveniently, and some of them bear very nice melons before they are as high as your head. After my seasickness on the steamer I was troubled with constipation. I mentioned it to Mr. Morrison, and he told me the island furnished the best remedy in the world, in the shape of a luscious fruit. When I suggested that fruit did not agree with me he said the papaya would agree with anybody—that, in fact, it contained the largest amount of vegetable pepsin of any plant or fruit known. We went over to a neighbor's—a Mr. Baker—who kindly picked off a ripe fruit almost as large as an average-sized pitcher and gave it to me as a "dose." One of the children brought me a spoon, and I sat down on the grass and enjoyed the "dose" as I never enjoyed any "medicine" before. The fruit looks exactly like a smooth muskmelon. The seeds, however, are very small—not much larger than tomato-seeds. Mr. Baker told me that people who are used to the fruit eat not only the seeds, but the entire inside, not scraping it out to throw away, as we do a melon. The taste is quite similar to that of a muskmelon, only it is smoother and richer. Imagine a delicious yellow ice-cream, flavored with some tropical fruit, say something like a banana, and you will get a faint idea of the luscious papaya. I ate the fruit again and again, at meals and between meals, and I never could see that it disagreed with me. In fact, when I took the first spoonful it seemed to satisfy a longing for something, I hardly knew what, that I had had almost all my life. Yes, it actually filled a "long-felt want." I do not know that I ought to say it furnished me strength as nourishing food does, such as eggs and milk—probably not. It is something like eating a lot of strawberries or nice peaches. The fruit is delicious; but with myself, at least, it would hardly be the thing to work on. Since eating the fruit I have attended a stereopticon lecture given by a missionary from the Micronesian Islands. He was speaking of one of the low flat islands almost on a level with the sea. I asked him:

"What do the natives do for a livelihood? What sorts of crops do they grow?"

"Crops! They don't grow crops or any thing else. They do not need to. The melon-tree and the cocoanut, with some other tropical plants, furnish them both food and drink whenever they feel inclined to climb the trees and help themselves. Why should they make gardens, or grow things?"

So you see that, in some parts of the world at least, the people subsist on these fruits with the milk of the cocoanut, and possibly the fish they catch. While visiting Gen. Hastings I expressed some surprise at seeing the papayas growing all over the plantation, here and there and almost everywhere. He laughingly replied that he thought he would have to tell how it came about. They fed the surplus fruit to the pigs, then the manure from the pens was worked into the soil everywhere, and this scattered the seeds so that they always had plenty of plants, and more too. In the picture you will notice the artist has named the tree the "pau pau." I suppose this is a common name that has been developed from the word *papaya*. It is a little unfortunate, for the "paupau" (or pawpaw) in the United States means a wild fruit that is not considered of much consequence. The papaya will bear the second year from the seed. It grows up about as high as your head one season, and bears fruit the next. It will frequently bear very fine fruit when only four or five feet tall. Noticing a picture in one of our agricultural papers, of this fruit, I obtained particulars from Martin Benson, of Dongola, Ill., who grows and sells them as a greenhouse-plant. I extract the following from a letter just received from him:

> *Mr. A. I. Root:*—The papaya is the grandest bedding plant ever offered, and a delicious fruit. I am very fond of it. It is as easily fruited in the greenhouse as tomatoes; blooms and sets fruit freely outdoors, but has not time to mature. They grow like a weed, and endure drouth better than any other plant. I think money can be made by cultivating this fruit under glass for near-by markets. My trees are all grown from a tree which has yielded 192 lbs. of fruit this winter, largest of which weighed 12½ lbs. MARTIN BENSON.
>
> Dongola Ill., March 30

By the way, I am told there are several different varieties. The finest I ever ate, I think, was the one I have mentioned, given me by Mr. Baker. I think he obtained the seed somewhere, and considers it extra choice. Well, I took the liberty of wrapping up the seeds from a nice melon, and brought them home; and if any of the readers of GLEANINGS would like to make a trial of the plants for greenhouse I will mail with pleasure half a dozen seeds if they will send me a stamped envelope addressed to themselves. It is quite an ornamental foliage-plant, as friend Benson says, looking not unlike a castor bean when it is small. I think it might be grown in a tub, and set outdoors in the summer time, just as we do oleander, century-plants, and others of like habits.

OUR HOMES,

BY A. I. ROOT.

Give, and it shall be given unto you; good measure, pressed down, and shaken together, and running over, shall men give into your bosom. For with the same measure that ye meet withal it shall be measured to you again.—LUKE 6:38.

There are lots of good people in this world of ours. Why, a good many of my "happy surprises" are right along in this line. Yes, and best of all you can usually discover a vein of good in the most disagreeable people if you set about it in the right way. And, still further, it is in your power to a certain extent to make people bad or make them good. You strike the wrong keys, and there will be discord and stubbornness; and after you once get the discord well started it is not so easy a matter to bring out the harmony. Our text of to-day tells how to do it. It says, "Give;" and then it adds, "and it shall be given unto you." The first thing to do to make men fair, liberal, honest, and generous, is to *treat* them that way—win their confidence. Why, after a man feels satisfied that you are not trying to beat him, and could not be induced to do it possibly, he will oftentimes surprise you by trying to outdo you in generosity. He will give even better measure than you gave him—"pressed down, shaken together, and running over." I think I can hear somebody say, "Oh dear me! but you don't find such men very often. Why, I never *heard* of a man who would shake the measure so as to settle the grain down when nobody was looking at him; and then to *press* it down after shaking, and putting on enough to make it run over—why, I do not believe there is such a man on the face of the earth." Hold on, dear brother; there *are* just such, and I want to give you a little sketch of a business transaction that made a lot of us on both sides feel greatly troubled and worried, but which ended —well, you just see how it ended. Read the following letter:

> *Dear Friend:*—The seeds and onion sets arrived this morning all right, but you have made a mistake in the peas. You sent half a bushel of Champion of England instead of Alaska peas which I ordered, and which you billed to me. I inclose the labeled packet, so you can probably tell whose fault it is. I never use the Champion of England peas, as they require too much work to brush them when you have any quantity; and in this country the wind is too hard on them. Onion-sets are all right, and very good.
>
> Seward, Neb., March 31. S. H BEAVER.

You see our customer lives away off in Nebraska; and sending half a bushel of peas of the wrong kind such a distance as that is a rather serious matter. The whole transaction was hunted up; the clerk who copied the order, the one who measured up the peas, the one who packed all the seeds in a box, and put it on the train. It seemed to be all straight everywhere; and the seed clerk declared most positively she put up the right peas, even if she *did* get on the wrong label. Then I dictated the following letter:

> *Friend B.:*—We are very sorry indeed to get your report of March 31st; but our clerk who put up the seeds declares that she put up Alaska peas instead of Champion. If this is the case, of course she got hold of the wrong label and put it into the bag. We inclose you a packet of both Alaska and Champion, so as to be sure that you have actually got Champion. We don't see how you could mistake them, however, for the Champion is a wrinkled sugar pea. In regard to brushing, we never brush either of them for field culture. You speak of the Champion being taller than the Alaska. The Alaska we sell are almost if not quite as tall as the Champion; on rich ground they will run up fully as high. The worst objection that I know of—that is, if it is an objection—is that the Champion is quite a little later. They are a wrinkled sugar pea—in fact, one of the best in the world, and always bring better prices than other kinds
>
> Now, I expect we shall have to make this matter good, no matter what it costs, if you say so. I think you can sell the Champion to somebody for pretty nearly what they cost. You will notice that other seedsmen generally list these higher than we do If we have really sent you the wrong peas, we ask you to sell them for what you can get for them, and we will either send you the Alaska or give you credit for the cost.
>
> This is the second mistake we have discovered in sending out seeds this season, and the only really serious one. If it was nothing more than putting in the wrong label, we are all right after all.

After the above had gone I watched the mails a little anxiously to see what the report would be. Here it is:

> *Dear Friend:*—I am very glad to say that the mistake was in the label, and that the peas are all right. I had never had any of the Champion of England peas, so was not acquainted with them, or I would have recognized them; and as I was not very well acquainted with the Alaska, and as they were labeled, both inside and outside of the bag, I thought surely they were the Champion of England, and so wrote you accordingly; but I see by the samples you send that there is a very great difference in the peas, and will know them hereafter, even if labeled wrongly. So there is no harm done, and the only difference it makes is that they would have been planted several days ago if I had known they were all right.
>
> You say you never brush the large wrinkled peas for field culture. I have had poor success with them in that way, as they rot badly for me, so I have been growing Premium Gem and the dwarf kinds of wrinkled varieties.
>
> I am very grateful for your offer to make good the peas, and appreciate it just as much as though the mistake had been as I first supposed. In fact, I am glad that the seeming mistake was made, as it does me *so much good* nowadays to find a man who is willing to do as he would be done by, for I sometimes feel as Elijah did when he wanted the Lord to take him out of the world, as he thought that he was alone. But, praise the Lord, Bro. Root, he knows our feelings; and when we need encouragement he gives it to us in a way we can not doubt that there are some left in the world who have not bowed the knee to Baal. I wish I could see you and talk with you personally; but such is not the case; but I expect to see you when we have done with the cares of this world, and shall "see as we are seen, and know as we are known."
>
> Your brother in Christ,
>
> Seward, Neb., April 5. S. H. BEAVER.

Why, dear friends, it would almost look as if there was a providence in the transaction, as the writer suggests. And then comes the signature of even a business letter, where he signs himself "Your brother in Christ." Well, this is not the first time that a mistake or misunderstanding has resulted in something that made me feel happy.

Away down through the past, during the years I have been in business, there are certain landmarks, as it were, scattered along here and there. Some accident or interruption in business has been the means of bringing out the fact that I have been dealing with a fellow-Christian—one who loves even the very *name* of Christ Jesus—the name that certainly should be the emblem of every thing that is honest and pure and upright. Of course, there is once in a while one who *talks* religion but does not *live* it. These things are sad—terribly sad—but they do not happen very often. Before I forget it, permit me to say that friend B. will be greatly surprised when he sees these letters in print. I had not time to ask his permission before using them; but I am sure he will not be offended. No real true Christian ever takes it amiss when any word or act of his is used, even in print, to spread the blessed gospel. I shall remember him many a long year, and he will remember me; and how it lightens the burdens of business to hear from those whom we have learned to know by some little incident like the one above! This fact of feeling that you are in touch with those who love the Lord, and those who would rather be held in the estimation of their fellows as being *honest* and *true*, rather than to be known as the possessors of millions, is worth every thing. May God help us to remember the *sacredness* of our calling and profession. May he give us grace to give good measure, pressed down, and shaken together. And, by the way, dear brother and sister, if you are not already familiar with the latter half of this sixth chapter of Luke, may I beg of you to read it again and again? Read it, and weave it into your every-day life. Keep those beautiful words in your mind all day long—words like these: "Do good, and lend, hoping for nothing again;" and, above all, strive each day to love even your *enemies*.

There is a story now going on in the Chicago *Advance*, that I wish all might read. It touches on this matter of putting foreign brands on certain goods that are manufactured here in our own country. The foreign stamp is to make them *sell*. Don't do it. Have nothing to do with such work. Tell your employers that you belong to Christ Jesus, and can not tell an untruth, nor even be a party to an *appearance* of untruth. If you have any thing to do with advertising, or writing advertisements, make such advertising agree with the spirit of our text. Give better measure than you agreed to give in the advertisements. Surprise people, not because the things you sell are not up to representation, but because they are even *better* than they are represented to be. Have nothing to do with scant measure in any shape or manner. If your goods have faults, let the customer know about the faults before he pays his money. Make his interest your interest, and verily the promise shall be yours—"For with the same measure that ye mete withal, it shall be measured unto you again." *You* will have happy surprises, as well as Uncle Amos. Men will be giving you good measure, shaken down, and running over when you least expect it; and you may even say with reason, "Why, look here, neighbor; how is this? You have brought me more than a bushel of potatoes." And then the neighbor will say, smilingly, "Well, you gave *me* more than *I* expected, at such a time." Why, dear friends, this would be a millenium here on earth if we could all get to doing business in that way.

I recently bought some Early Ohio potatoes of a neighbor. I told him I did not believe I could stand it to give the price he asked for them. There were fourteen bags, and he put a bushel in each bag. Finally I said, "Let's pour out a few and see what sort of *measure* you give." The Terry bushel boxes were heaped up—in fact, the potatoes would not all stay on. Said I, "Oh! if that is the kind of bushels you have in every bag I will willingly pay the price." Now, he had not told me he had given extra large measures. He did not say any thing about it; he simply said he had brought me fourteen bushels. I have bought potatoes several times where they did not make the bushel boxes even level full. You may suggest weight. Well, that is the proper way to buy potatoes; but even then we can not always make it exactly fair by weighing; for where they are kept in a damp cellar they will weigh considerably more than where they have been kept in a cold cellar that is pretty dry. There are many things to be taken into account in handling goods, especially farm produce; but where the man has it in his heart to be fair—where he is trying to live out and to live up to the teachings in the sixth chapter of Luke, why, bless your heart, there will not be any trouble anywhere. Everybody will be glad to see a Christian who not only talks in prayer-meeting, but who makes his every-day acts talk louder than words *can* talk.

Now, friends, shall we not just have fun during this beautiful springtime, instead of wearing out with care and worry, and, may be, have a neighborhood quarrel on our hands besides? May the great Father be with you all; and may the Spirit of his only Son, Christ Jesus, help you to love your neighbor as yourself; and not only this, but to love even your enemies until they are enemies no more, but dear friends and "good neighbors." God speed you all.

THE SHAWNEETOWN DISASTER.

I suppose most of the readers of GLEANINGS have heard about the terrible flood at Shawneetown, Ill., and its consequent loss of life and property. It turns out that there was a bee-keeper among the number. Please read the following letter:

Dear Sir:—I was living in the suburbs of the town where I have been living for the last 20 years. I had my bees, 200 stands, and all I had, there. Yesterday at 4 P.M. the levee broke on the upper side of town, it being over 20 feet high, and the water came in such a rush it washed away nearly half of the town, drowning perhaps 100 or more people. I lost my bees, building, and every thing I had, excepting the shirt I had upon my back, and one blanket I had around me. The water lacked 4 feet of being to the top of the levee. No one was suspecting any thing. By some means it cut under the bottom of the levee, though the base was over 100 feet. My family all escaped with only the clothes they had on. I do not want, after those long hard years of toil, to be taken to the county-house, therefore please cancel my order and return to me the money. Now, friend Root, if you can help me by appealing to the sympathy of the bee-keepers of the country, please do so. Were I on my feet I would ask no help; but in my condition there is no alternative.

Hoping you will be able to help me some in this terrible misfortune, I am respectfully yours,

Shawneetown, Ill., Apr. 4. THOS. McDONALD.

Perhaps I may add, by way of explanation, that the writer of the above is a cripple, and has had a very hard time in scraping together his little property that was taken away almost without a moment's warning. Such disasters, I am glad to say, are not of frequent occurrence; and neither our friend nor any of the sufferers could in any way be blamed for the catastrophe. It seems to me no more than fitting that the bee-keepers of our land, under the peculiar circumstances, should give him a little help. We will start the subscription at $10.00, but hope that no one will be hindered, even if he can give only a little. Let us have it, friends, big or little, whatever amount you feel you would like to give. Money may be sent direct to the writer of the above letter, or to us, as you choose. Perhaps it had better be sent directly to Mr. McDonald, as he would in that case get it sooner. We will give proper credit through our journal for all that may be sent. Large sums have been sent, not only in money, but in donations of food and clothing to the sufferers. Now let us see if the bee-keepers of our land can not look after this, one of our number, who seems so discouraged and downhearted. You know how the bees in a hive will pitch in when somebody injures just one of the forty thousand. Shall we not do likewise?

One thing more: These goods that were ordered were mostly odd-sized—something that nobody but friend M. can use; and he can not use those unless he has some bees. If the bee-keepers of our land will give him some bees so he can start in again this spring we will donate $25 on these odd-sized hives. Of course, we have returned all the money he sent us.

IS IT WORTH WHILE TO VISIT OUR FRIENDS IN OTHER COUNTRIES, ETC.?

THE following clipping from the *British Bee Journal* of Feb. 10 hits the spot so exactly that we give it entire:

BRITISH V. AMERICAN BEE-KEEPING.

Messrs. Editors:—On page 2 of your first issue for 1898 you appeal to American and German bee-keepers to confirm your statement that British bee-keepers have little to learn as to bee-management from their friends abroad. I suppose it's a common thing for British bee-keepers to think there's nothing to be learned about bee-keeping outside their own island, and I know it's quite common for Americans to think there isn't *enough to be learned across the water to pay for wetting their feet by wading across.* I really believe both are fooled. I think if you were to be turned loose among the bee keepers of this country you'd get many a hint of value; and if I could spend some time among English bee-keepers I'm sure I'd bring away a lot of information with me.

Why, don't you know there are a good many things in which there is a practical difference, both in appliances and management? Some of the difference may be accounted for by the different conditions, but many can not. Now, when you and I differ as to appliances or management, as no doubt we do, if we were to get together long enough don't you suppose each would learn something from the other? I don't believe either of us is so pig-headed that we wouldn't be willing to change if we saw the other had something better. Why, bless your heart, I look eagerly through the pages of the *B. B. J.* every week to find something new, and I think of more than one of you Britishers as a personal friend I'd be delighted to meet.

Now, please don't talk that way any more. You see, we expect to keep on learning from you, and it makes us feel that it's just a bit like stealing if we can give you back nothing in return. Yours till you say something bad again.—C. C. MILLER, Marengo, Ill.

[*Dear Dr. Miller:*—We don't want to say "something bad," and try to avoid doing so; that is just why we left it for others to say whether or not the reproach against British bee-keepers of "discovering nothing for themselves" was justified or not. Nor do we despair of getting some justification for our confidence in American fairness in this respect, even from yourself. Anyway, I (as junior editor in charge) am delighted to hear of your hearty wish to meet one of us "Britishers;" and as our senior, Mr. Cowan, is just now on American soil, I cordially invite you to try to get a bee-talk with him—*say at Medina,* where other editors could join you—about our ways and yours of doing things. It would do us all good to have a "report" of such a meeting. What say you?—W. B. C.]

The above emphasizes a point I have long had in mind. The man who goes to California, or Florida either, and undertakes to dictate to the bee-keepers better ways for doing things had better go slow; and it is just the same way with gardening. I expected to teach the "natives" lots of things when I got over to Bermuda; but after I had been there about a week I had the conceit pretty well taken out of me. My ideas were very good for Ohio, but they did not fit Bermuda worth a cent; and when it comes to rapid work I never saw any men anywhere who would go through a piece of ground and leave it in as nice condition so quickly as did those Bermudans; and they acted just as if they liked the fun of it. The onion-planters work so rapidly you actually could not see what their hands were doing. We see something of this same thing in a printing-office when a "lightning compositor" gets to work. That is really rich, what Dr. Miller has to say about "wetting their feet by wading across the Atlantic Ocean;" but it describes to a dot the conceit of some people. Now, they do not *all* live among the Yankees, nor are they *all* over in England; they are scattered around promiscuously, and they are usually a class of people who have never been away from home very much, and do not really know what is going on in this great wide world of ours. Why, even your old friend A. I. Root used to think America was ahead of all other nations in every thing. When somebody told me that in naval equipments England stood at the head of the world, Germany second, Russia third, and the United States—yes, the United States all scraped up—stood only *fourth*, I opened my eyes in astonishment. Then when friend Morrison remarked that the English flag floats over 450,000,000 people—a third of the whole human race—while the United States all told, according to our own figures, has a population of only about 65,000,000, I opened my eyes still wider in astonishment. Now, please do not any of you ever again get into that foolish attitude of thinking that your own country, your own bee-journal, or whatever it may be, contains *all* that is "worth having" in the whole big world.—A. I. R.

BEWARE OF MEN GOING AROUND TO REPAIR SEWING-MACHINES.

I send you this notice of a swindle that is being carried on in these parts, and no doubt will be extended to other places in time. The party represents a sewing-machine-repair agent; and if told the machine is all right he still insists on seeing it, and then he will declare it is in a horrible condition, as it has "lost motion," and is full of dirt (which may or may not be true). Anyhow, he will try to convince you it should be cleaned, which he would do reasonably, and that he never overcharges, etc.—say about 75 cts. or a dollar, also stating that he has not a dissatisfied customer; and then he will show you a recommendation from a great many you may know, but he is always careful to get that recommendation into his pocket. When you ask him how much it is you will be astonished at a price from two to *ten times* what was expected. He will then begin to argue that it needed more attention than he expected, and he said it would be only *about* such a sum, so far as he could see at the time. Then he will threaten to take the machine away, which he does by just unscrewing it and taking only the top part As he deals mostly with the women folks he generally succeeds in getting his price in full, to get rid of him, and to prevent a lawsuit which he threatens. Look out for him. G. W. LAWSON.

Centerville, Ohio.

The above is an old dodge. It usually succeeds when the man of the house is not around, or where he can find a man or woman who has not cheek enough to drive him off. In the first place, never let an utter stranger tinker with your clock or sewing-machine. In the second place, have it distinctly understood that you will pay so much and no more if you should think best to set the stranger at work. Third, if you get in the predicament mentioned above, tell the man to take the machine off from your premises if he dare. If he has cheek enough to have his threat put into execution, have him arrested. These land sharks will almost always take a reasonable amount when they find the scare (?) game does not work.

WIDE-TIRED WAGON-WHEELS.

Reports from Practical Experience, both for and against them.

GLEANINGS has just arrived. You ask farmers who have used wide-tired metal wheels to report. We have had a set four years, and find them very convenient and durable. My brother, E. W. Evans, drew large loads of ice over plowed ground that was frozen hard, and very rough, without any apparent injury whatever to the wheels. The wheels are low, and so are very convenient for drawing manure, rails, stones, corn fodder, etc. Instead of cutting into plowed ground the broad tires roll it down and make a good road. For drawing hay, nothing could be better; and there is not so much danger of tipping the load over. Our wheels are 24 inch front, and 32 hind, with 5-inch tires, and are not as heavy as our wooden wheels. We procured them from the Enterprise Manufacturing Co., Quincy, Illinois. My father says he would not be without them even if they cost double what he paid for them. ARTHUR A. EVANS.

Kingsey, P. Q., Can., Mar. 25.

WAGONS AND WHEELS; SOMETHING FROM PRACTICAL EVERY-DAY EXPERIENCE.

The wide tires and low wheels have many points of excellence, but there are also drawbacks. I don't know about the wheels mentioned, but some of my neighbors got iron or steel wheels for their regular farm-wagons; but under heavy loads they would go down. The rims would get out of the true circle, and some of the spokes got loose, and then the thing would bend together and could not be repaired as a wooden wheel could have been. I have had in use for about four years a low-down wagon with 6 inch tires. I also have a regular farm-wagon called the "Champion," which, by the way, is a horse's true friend, as the tongue does not strike if the front wheels strike an obstruction. You all know how unpleasant it is to drive over boulders or even hard rough ground with the ordinary wagon, as the tongue constantly strikes right and left, and bruises the horses' legs and shoulders badly. With the Champion I can drive over any obstruction with the front wheels, and the tongue will keep straight between the horses and not hurt them in the least; at the same time the tongue will turn with the greatest ease under a very heavy load, something no other wagon will do. Thus you see I have a good farm-wagon; but with all that, our low-down wide-tire wagon is used ten times as much on the farm as is the regular farm-wagon. My wagon was made by the Handy Wagon Co. It is called the "Handy wagon," and is true to name. The wheels are solid wood, or, rather, planks bolted together with the grain of the wood running in three different directions. It appears thus far entirely unbreakable. We use it to haul about every thing on the farm, and, when solid, on the road. It is but two feet high, while the other one is over four feet, and it saves very much work to load and unload the potato-boxes, fruit, vegetables, manure, hay, grain, silage corn — in fact, any thing that has to be handled on a farm. It will not upset along a side hill, like a high wagon. It will turn very short, almost like the manure-spreader, and that is a convenient feature.

I have now given one side; but there is another. If the ground or road is soft, so the wheels will cut in an inch or more, they will refuse to turn, but will slide, pushing the earth in front of them until a stone or something solid is struck, and then they turn, and a large mass of earth is pushed together where the wheel starts. This is repeated often, and puts the roads in an awful condition. If the road is full of ruts, as it is in winter and spring, the wide tires can not be used, as the wheels will stick in the ruts, and the horse can not budge it. The only remedy is to pry the wheel out. On solid road or soil I can haul a ton as easily with the low wide-tired wagon as with the other one; but there are conditions when it can not be used at all. L. W. LIGHTY.

East Berlin, Pa., Mar. 26.

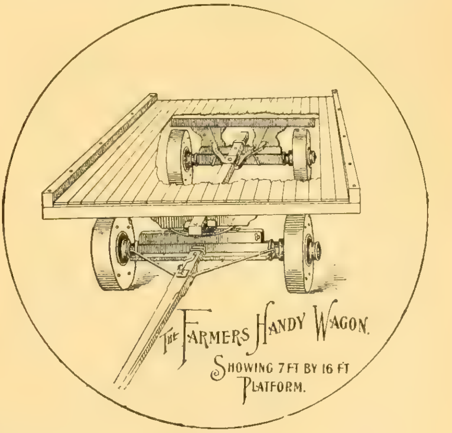
OBJECTIONS TO THE WIDE TIRE.

You invite us farmers to give our experience with wide-tired wheels. I have given the subject considerable thought for the past six years, both as to the construction of the wheel (for I've been trying to improve it, and to road-making, in which I've had much experience). So you see I've got wheels in my head (yet I seldom ride one).

You are right in saying that the steel wheel is necessarily heavier than the wooden one, if intended to stand up as long under the same load. The rim (tire) must be very heavy to give it stiffness or else the wheel tends toward flattening under its load; and this process going on, gradually loosens the spokes. Another objection to the small (diameter) steel wheel is that the leverage to overcome friction upon the axle is also reduced—this especially when the small wheel is fitted to a wooden axle (with thimble-skein).

The wooden felloe (or something else), which adds thickness to the rim of the wheel, is not only necessary for the purpose of strengthening the wheel, but this deep rim plays an important part upon our dirt roads. For instance, when the wheel sinks into the earth or mud beyond the depth of its rim the earth closes in over the rim, and is carried up with it—evidently taking the dirt from the low places and depositing it on the high. Especially is this noticed where deep ruts have been cut by narrow tires; and when the surface of the road is frozen, say an inch or two, and those wide (thin) tires wedged into the ruts, they stick; and I have known them to break out great chunks of frozen earth.

Again, on dirt roads made convex, or with an arched surface (for the purpose of shedding the water to the side ditches), those wide tires slip sidewise more than the narrow, and, having little depth to the rim, it slips under the earth like a plowshare, rolling the dirt down toward the side ditches. This same objection to the wide thin-rimmed wheel is apparent on roads having an uneven surface (holes gouged out) caused by cobblestones or other hard substances on one side of the road, while the opposite side is composed of dirt, etc., which yields under the extra blow it receives, the narrow tire first cutting or gouging out a hole, then the thin rim of the wide tire is shoved into or under the bank left by the deep-rimmed wheel, and large chunks of earth lifted out; consequently, instead of repairing the damage done to the road by the narrow tire, this thin rimmed wide tire aids, under the above conditions, to damage them. But I do not lay the blame upon the small steel wheel alone, nor entirely upon the thin rim; for some wooden (felloe) wheels are not much better in this respect than the thin or no-rimmed wheel, because the tire extends beyond the felloe (is wider). This is calculated to protect the felloe against the cutting action of the earth, etc., while cutting through it, and will lift and plow the earth to a certain extent as well as the little steel wheel, under the conditions above mentioned.


THE FARMERS HANDY WAGON.
SHOWING 7 FT BY 16 FT PLATFORM.

I have been trying to boom the wide tire wherever there was a chance; but it is uphill business where the narrow one is continually cutting a rut for the wide tire to run in. JOHN HANDEL.

Savanna, Ill., March 25.

You will notice in the above letters we have some very strong points in favor of these wheels, and also the particular objections. All together the testimony is pretty strong in favor of the solid wooden wheel made by the Handy Wagon Co. On account of this we have asked the manufacturers to furnish the cut as given on previous page.

It seems to me that a farmer who has very much use for a wagon should have, as I have intimated before, two wagons — one with the low-down wide tire, either wood or metal, and another, the ordinary kind, so that, when the time does come, even if not very often, that wide tires are not just the thing, the other wagon can be used I am quite sure that, on a farm, something like the wagon we show above will be found exceedingly handy. We have one with small-sized rather wide-tired wooden wheels, that I find very convenient when the other wagon is away from home, being repaired, or even if it should have a heavy load on that it is not convenient to remove just at that time.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

SOME OF THE STRANGE THINGS ABOUT POTATO-GROWING, ETC

The report of C. M. Whitney, in Gleanings, regarding the Thoroughbred potato, coincides very closely with our own experience with that variety. Our seed was obtained from you, and was given an equal chance alongside of Early Ohio, Polaris, and Carman No. 1. I don't think a bug visited the vines, as it is doubtful whether a dozen bugs could have been found in our entire field during the season. It came up well; we had a good stand, but it refused to stool, made almost no growth, set tubers shyly, and, when dug in the fall, gave us comparatively nothing, either in quantity or quality. On the other hand, the rest of the field gave us splendid returns in large, clean, beautiful potatoes. Now, please don't get the idea that I have fallen into a towering rage, and am going to take revenge by ordering my journal stopped, all on account of a potato. Not at all, Mr. Root. We have been in the gardening business long enough to find out that certain plants, be they vegetable or fruit, may turn out very fickle on occasion. Season, locality, soil, and treatment create conditions favorable or otherwise. We shall give the Thorougbred another season's test on different soil, with possibly a repetition on the same soil.

Three years ago this spring we bought a barrel of the New Signal, then a much-lauded potato, which was planted and given our usual good care. Right alongside of them we planted Carman No. 1. The former gave us an enormous crop of the largest, smoothest, and finest-tasting potatoes I ever saw or ate Carman behaved most abominably—ill-shaped, scrawny, a disgrace to any decent farmer. Both were planted again the following spring on the *very same* plat of ground, when, to our unbounded astonishment, the case was exactly reversed. Carman came out with colors flying—bright, large, clean, of good form, and excellent cooking quality; but, alas for poor Signal! it retrograded at a rate I never heard of in a potato or any thing else.

Still again, the best specimens from both were selected for a third trial on the same ground, and again Carman came nobly to the front, giving entire satisfaction, while *Signal* dwindled down to—*nothing* —yes, that's the only way to describe it. We have said, "Good by, Signal, for ever." Can you explain this, Mr. Root?

While we are on the potato subject I wish to touch the Rural New-Yorker. It does *not* succeed everywhere nor with everybody. We tried it in 1893 and 1894, in Central Nebraska. In 1893 it gave us no yield, no size; and in quality it was so watery and soggy that we simply could not eat it. In 1894, Nebraska's year of overwhelming disaster, it succumbed entirely to drouth and heat. The vines actually seemed to cook in the sun, while the little tubers withered and shriveled in the soil. Right beside them Charles Downing and Early Ohio gave us a little more than one hundred bushels per acre. Bliss Triumph, obtained from you two years ago, never gave us satisfaction. The foliage turned brown, and shriveled, resembling leaf-blight. We have discarded both it and Howe's Premium, which was affected in the same way. We regard the two as identical.

Of the two new tomatoes purchased of you last spring, Fordhook Early and Mill's Earliest, the latter proved early and a fine variety; the former *ripened with Ponderosa*, and was badly affected with black rot—not one healthy specimen in the patch.

Just a word about that Rocky Mountain cherry, and I am through.

Do not be deceived. It *is* simply a sand cherry—nothing more, nothing less. Knox Co., Neb., is the home of the sand cherry. We have fruiting shrubs here, anywhere from six inches to six feet in height. We have two distinct grades—one is very fair eating, fruit large as a tame cherry; the other, fruit smaller, bitter, sour, and worthless. If you care to test some of them for yourself I shall take pleasure in sending you a box of the fruit next summer, free of all cost. The mountain sand cherry may have the advantage over ours in size of fruit, just as the mountain serviceberry and Buffalo berry have over those grown here or further East. By the way, that buffalo berry is a much-abused fruit. We think highly of it, and I should like to ask you, Mr. Root, if you ever tasted any of its fruit; also if you are aware that its blossoms (those of the male tree, I mean) find favor with the bees. Mrs. L. E. R. Lambrigger.

Niobrara, Neb., Feb. 23.

We have had somewhat the experience our friend mentions in regard to testing new potatoes and other things, but never before have I had any thing so extreme. My first trial of the Rural New-Yorker made me pronounce it poor in quality; but afterward, when we had a dry season, it came almost up to the Freeman; but it has always proven to be a great yielder in our vicinity. I am glad to have further evidence that the Rocky Mountain cherry is sometimes fit to eat. They are certainly large, fine-looking cherries, and they call forth exclamations of astonishment to see such large fruit growing on such small bushes. Now, then, if we can have the *quality* added, it will certainly be worth while. Our buffalo-berry bushes have blossomed twice, but I think the fruit must have been killed by the frost. They are now ready to blossom again, and we hope for better results. Yes, I have seen the bees on them, and they were kept pretty busy.

SWEET-POTATO CULTURE.—PREPARING THE GROUND.

Continued from last issue.

The custom of plowing the ground early in the spring, and letting it lie idle till ready for use I find does not suit me so well as plowing it early, harrowing and cultivating it frequently, and ridging up some two weeks before setting. I make the ridges 3½ feet from center to center, and run over them with a Z. Breed cotton-weeder No. 9. The center fingers of this weeder are so arranged that they can be lowered for this work, and raised again for level culture. It requires about 15 minutes to make the change. If the ground has been properly prepared it will leave the ridges in excellent order. I use the single-bar plow for ridging, but presume the double would do just as well.

Be sure to run over the ridges with the weeder after every shower, and you will find that, when treated in this way, they will hold moisture better than those freshly made.

SETTING THE PLANTS.

The proper time is about May 1st in Southern Ohio. I prefer to wait for rain. One man can easily set 5000 plants in a day; and by hurrying a little he may reach 10,000. It requires about 12,000 plants to an acre, rows 3½ feet apart, and a foot between the plants.

I have a small boy to drop the plants across the ridge, with the roots toward the right side, looking up the row. I straddle the ridge, and push the roots into the fresh soil with a small wooden paddle. This straightens up the plant. I then exert a downward pressure with the thumb and fingers of my left hand, and at the same time pull a little dirt with the paddle on the opposite side, and press downward toward the left hand. If one hasn't many to set, it would be better to use the forefinger of the right hand instead of the paddle.

To set the plants in a dry time, I use the puddling plan. Take fresh cow manure and a clay soil, and add water by stirring till quite a lump will hang on to a plant when it is dipped into the mixture; then take a small bucket and place in it some of this mixture, and about 50 plants. I do not have any one to drop the plants, but set the bucket in front as I walk down the row, and, after making a hole with a dibble, I carefully lift the plant; and, after swishing it around in the bucket, I drop it into the place already made, and press the dirt against it firmly, using the thumbs and fingers of both hands, exerting a pinching and downward pressure.

Another method, called "the watering plan," is as follows:

In the evening, say after 4 P. M., make a hole in the ridge; drop in the plant, and pour in a pint of water. Let this remain till next morning; then fill with dry dirt. This will prevent baking the soil around the plant.

Never set plants in a dry time that have come from a distance. Heel them in first, and, after getting them started, they can safely be removed to the field.

CULTURE.

I go over the ridge with the weeder already mentioned, just as fast as they are set, and it is indeed seldom I find a plant torn out. I use the weeder after every rain, and cultivate deeply between the ridges with a cultivator. I use the weeder till the vines are three feet long. If the horse walks slowly I find the vines slip around the fingers readily. When the vines are that long I give the ridge a thorough hoeing, and some two weeks later go between the ridges with the bar-plow, laying the vines over out of the way. By using the weeder, and cultivating in this way, I find the work of hoeing is greatly reduced.

I never bother pulling the vines loose after the last plowing, and never clip the vines to keep them from getting too large. J. Q. MULFORD.

Lebanon, Ohio.

Concluded in our next issue.

I can endorse every thing said of sweet clover on page 277. My neighbors, to whom I have mentioned the matter, think it very strange that it should be considered a nuisance by any one. J. M. CUTTS.

Chambers, Ala., April 8.

SPECIAL NOTICES BY BUSINESS MANAGER

SPECIAL PURCHASE OF BUSHEL BASKETS

We have recently purchased a large quantity of hand-made oak-stave bushel baskets at a price which enables us to offer them for $1.50 per dozen; 80c for 6. This offer holds good only while present stock lasts.

WATER-WHITE CALIFORNIA HONEY.

We have received from R. Wilkin a carload of the nicest water-white honey we ever had. It has wintered over, and shows no signs of candying; is very thick, light-colored, and of very fine flavor. Price $1.00 per gallon; 60-lb. can for $5 00; case of 2 cans, $9.00. Lots of 5 cases or more, 7c per lb. Light amber California honey at 1c per lb. less than above prices. Samples of water-white mailed to any one interested, for 6c, the price of the sample package. Free to intending purchasers.

BEESWAX WANTED.

Beeswax is growing more scarce in the market, and price is advancing. We mark up the price we pay 1 cent a pound, and will pay 27 cts. cash or 29 in trade for average wax delivered here. We are using over two tons a week, so you need not be afraid of sending us too much; but don't put off sending it. If you wait till the season is nearly over before you send it you must not be disappointed if the price is lower again. Pack it securely, and be sure to put your name and address on the package, and write us, sending weight and shipping receipt.

MAPLE SYRUP AND SUGAR.

During the past week we have secured about 100 gallons of good "Buckeye State" maple syrup and a limited quantity of sugar, which we offer at the following prices:

No. 1 first-class syrup, 95 cts. per gallon; 10 gallons or more, 90 cts. per gallon.

No. 2, good color, full weight but slightly buddy, owing to being made late in season; per gal., 85c; 10 gallons or more, 80c.

We can furnish a limited quantity of sugar at the following prices: Extra choice, 10 cts. per lb.; No. 1 sugar, 9 cts. per lb.; No. 2 sugar, 8 cts. per lb.

THE SITUATION AT PRESENT.

During the past week our main engine-shaft broke in two. Very fortunately there was a large pulley keyed on just where the break occurred, which held the shaft in place till the break was discovered, and no serious damage was done, except a shut-down of a part of our wood-working building for three days and four nights. By day and night work in large iron-works in Cleveland we secured a new shaft in two days, and every thing is going again full blast. We have been shipping about an average of a hundred orders a day, besides two to three full carloads a week, so far this month, yet we have hardly held our own, and I believe we have more unfilled orders than at any previous date. As the season advances, the need of prompt shipment grows more imperative. We are doing our utmost, and our friends will have to exercise lots of patience or else look elsewhere for their supply. We have bought four carloads from other factories, and are placing orders for more. I will mention a few items to show the amount of goods we are turning out. During March we shipped seventeen thousand pounds of Weed new-process foundation, and so far this month we are going ahead of last month's record. We have about twenty people working on fences alone, and turning out about 6000 a day. Our less than carload shipments for the first week of April aggregated sixty tons weight, or five carloads, besides three full carloads for the same time.

Many orders for little things of which we have a surplus, or for seeds and department store goods, go off within a few days; but on general bee-keepers' supplies, especially hives, we are very much behind.

SPECIAL SALE AT BALTIMORE, MD.

We have on hand at Baltimore, Md., in the hands of the Rawlings Implement Co., the following goods which we offer, to close out quickly, at the special prices annexed. Orders may be sent to us or to the Rawlings Imp't Co. direct. Some of the goods are old style, made several years ago, but to many they will answer the same purpose as the latest make. If interested, and you desire further particulars, write—remembering, however, that, at the prices we have set on the goods, they are likely to go off quickly, and they can not be duplicated at these prices:

300 thick-top brood-frames with top-bar 19⅛ long, $1.25 per 100; $3.50 for lot.

700 all-wood frames, same as we now list, $1.10 per 100; $6.50 for lot.

200 half depth wide frames to hold 4 sections, 4¼x 1⅞, $2.50 for lot.

5 Lareese bee-escapes, same as we formerly cataloged, 25c each; $1.00 for lot.

5000 two-pound sections, 5¼x6¼x1⅞. Write for special offer on this lot.

6 boxes of ten 1-gallon square cans with screws, $1.20 per box; $6.50 for lot.

15 eight-frame gable covers for Dov. hives in flat, 15c each; $1.75 for lot.

160 24-lb. single-tier shipping cases for 4¼x1⅞ sections, no glass, nails, or paper, $9 per 100; $13 for lot.

10 12-lb. shipping-cases without glass, 75 cts.

90 Dovetailed winter-cases, in flat, 50 cts each; $4.50 for 10; $37.50 for lot.

1 comb-bucket, $1.00.

2 Hubbard section-presses, at $2.00 each.

30 old-style Alley queen and drone traps, 35 cts. each; $3.00 for 10; $7.50 for lot.

10 pair of hive-carriers, at 15 cts. a pair.

450 plain cartons for 4¼x1⅞ sections, $2.25 for lot.

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J. W. K. SHAW & CO., Loreauville, La.

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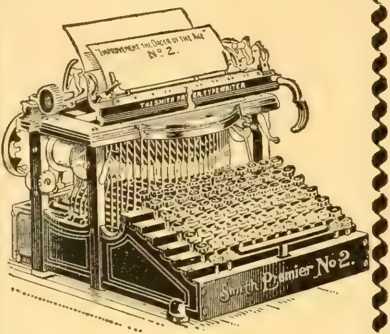
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If so, you surely want Nissly's Poultry Annual and catalog of "Everything for the Poultry Yard," 14th edition. It's a pretty book of eighty 6x9 pages, finely illustrated, full of information. Worth dollars to every poultryman. It's free—only a 2-cent stamp for postage. Address

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CHAS. RUE, Minerva, Ohio.

Special Notices by A. I. Root.

ONION-SETS REMAINING ON HAND TO DATE.

In the first place, we have about a bushel of Prizetaker onion-sets; ½ bushel white onion-sets. Either of the above at 20 cts. per quart, $1.00 a peck, or $3.50 per bushel; 1½ bushels of Yellow Danvers in very fair order for the season of the year, at half the above prices; about 5 bushels Whittaker onions, large and medium sizes, at 10 cts. a quart; 50 cts. a peck, or $1.75 per bushel. All onion-sets sent by mail, for 10 cts. per quart extra.

ADVANCE IN PARIS GREEN.

Instead of the prices given in our seed catalog, in consequence of the advance we shall be obliged to make prices as follows: ¼-lb. package, 8 cts.; ½-lb. package, 14 cts.; 1-lb. tin can, 25 cts.; cans holding either 2 or 5 lbs. each, 23 cts. per lb.; 14-lb. pails, 22 cts. per lb.; 28-lb. pails, 21½ cts. per lb.; 56-lb. pails, 20½ cts. per lb.; 100 lbs. at an even 20 cts. per lb. This is strictly pure Paris green, put up expressly for us. You can tell something of how small a profit we make by asking for prices per pound at your drugstore. We make these low prices, for it seems to us that a great staple like this, that our farmers and gardeners need, should not be sold at regular drugstore profits.

CAULIFLOWER SEED AND PLANTS.

We have for years obtained our seed from H. A. March, Fidalgo, Wash., as most of our readers are aware, and hence we thought fit to copy the following from Mr. W. J. Green, of the Ohio Experiment Station, in regard to March's seed:

H. A. March, Fidalgo, Wash.: — Both varieties of cauliflower seed received from you last spring were entirely satisfactory. The seed has a high germinating power, and the plants are remarkably uniform, and true to type. I consider your cauliflower seed as *equal to the very best* in the market; and as long as you keep it up to the present standard I shall not hesitate to recommend it.

I have tested nearly all of the best varieties and strains; and if there is any better than yours I don't know who has it. W. J. Green, *Horticulturist.*

TOBACCO DUST — ITS VALUE AS A FERTILIZER WHEN USED AS AN INSECTICIDE.

In Special Notices in our issue for March 15 I stated that tobacco dust was not only valuable as an insecticide, but that it was worth all it costs as a fertilizer. I think I should have said, and, in fact, I meant to say, it is worth about all it costs as a fertilizer *when bought by the ton.* One of our correspondents has taken me to task a little, and asks my authority. I accordingly wrote to our experiment station, and here is their reply:

Dear Sir:—Tobacco, according to analysis of the entire leaf, contains about $20.00 worth of fertilizing ingredients per ton. It contains a high per cent of nitrogen and potash, and a low per cent of phosphoric acid. To get the best results with tobacco dust as a fertilizer, it would be necessary to add 500 pounds of acid phosphate to a ton of the tobacco dust. We have never used it or had any practical experience with it as a fertilizer. W. J. Green.

Ohio Ag. Exp. Sta., Wooster, O., Mar. 30.

Permit me to add that we can furnish a ton of this tobacco dust for an even $20.00. The purchaser would have to pay freight from the factory where it is made.

THE SEED-POTATO TRADE AT THIS DATE.

We started last fall with something like 3000 bushels; but they are so nearly all sold now that we shall not be able to give away this year a barrel of potatoes to everybody who sends us a dollar for Gleanings. In thinking it over I am both sorry and glad—sorry for your sakes and glad for myself. Now, may be you will say that does not sound like Bro. Root's teachings. That is true; for I try to rejoice when you rejoice, and mourn when you mourn. But in this case we can all feel glad, who are engaged in the potato business, because our entire product has been taken off our hands (or at least nearly all), at very fair prices.

We have on hand just now 3 bushels of White Bliss Triumph, firsts, and 6 bushels of seconds. We have two bushels of Red Triumphs, firsts, and six bushels seconds of the same. As the above were all bought from away down in the State of Maine, after we had sold out, the best prices we can possibly make on them are $2.00 a bushel for firsts and $1.50 for seconds, while they last. The Red Triumph is, as you may remember, the potato grown almost exclusively on the island of Bermuda, the one I have written about. We have also 66 bushels of Bovee potatoes at $2.00 a bushel, or $5.00 per barrel.

About 200 bushels of Freemans, grown by T. B. Terry, extra nice, not sprouted a particle, at $1.25 a bushel or $3.00 a barrel. New Queens, 25 bushels, same price as the Freemans.

Also 20 bushels of Monroe Seedlings; 45 bushels of Sir Williams; 50 bushels of Rural New-Yorker No 2; 5 bushels of Koshkonong. All of the above four are offered at the low price of $1.00 a bushel or $2.50 per barrel. Carman No. 1 we have 16 bushels. In addition to the above we have 8 bushels of Early Vaughns and 5 bushels of Early Zehr. Price of last three $1.25 per bushel, or $3.00 per barrel.

THE NEW HIGH-PRICED STRAWBERRIES.

I am under contract not to sell the Darling for less than 25 cts. each; but, of course, I can give them away if I want to; therefore every one who sends us $1.00 for Gleanings may have a Darling plant if he asks for it. These plants will be potted in jadoo if you will wait till the potted-plant season. If you do not want to wait, you can have the ordinary layer plants right off now. If there is one already due you, send us a postal card and we will send it at once—that is, if you prefer to have the layer plant now rather than to wait, say, till June, for a potted plant. The Nick Ohmer is offered on the same terms as the Darling. "Earliest" we are permitted to sell at 10 cts. per plant. And, by the way, we have got a great lot of runners out for the Earliest already. Some of them are more than a foot long, and we hope to have plants in May. In place of a Darling or Nick Ohmer, you may have *two* Earliest if you want them. Or you may have Carrie on the same terms as the Earliest, or the Margaret. Marshall, Brandywine, William Belt, you may have on the same terms, only we will send *four* plants for every dollar sent for Gleanings, if you ask for them when you send in the money. All the above varieties, except the Carrie, are perfect, and I shall feel happy every time I send them out, because they are all beautiful plants, and I feel sure they will give you lots of pleasure. Strawberries are my hobby and recreation just now, especially nice strawberries, and I want the friends who subscribe for Gleanings to share the pleasure I enjoy in taking good care of them. At present I know of no fertilizer so good for strawberries as old well-rotted horse and cow manure. A mixture of the two works excellently. The jadoo fiber seems to be a splendid thing for potted plants, and for sending potted plants by mail; but it soon loses its fertilizing property. You had better break off most of the jadoo as soon as you get the plant, and set the plant out in good rich garden soil. Ground that will give you tip-top potatoes will give you tiptop strawberry-plants.

A NEW PORTABLE ELECTRIC LAMP.

I have been happy for several days with a bicycle lamp made by the Acme Electric Lamp Co., 10 South Fifth St., Philadelphia, Pa. The retail price of the apparatus is $5.00, and it weighs a little over two pounds; but the greater part of the weight is the dry battery that operates the light, and which slips into the apparatus as quickly and easily as you would slip a cartridge into a gun. This dry battery, or, rather, series of four batteries, is all put into a paper tube about a foot long, and 1¼ inches in diameter. This set of batteries costs only 16⅔ cts. On the case is a rubber stamp dating the time it was prepared. The battery is guaranteed for sixty days; but the proprietors say that, with care, they will often last four or five months. This battery, however, during actual work, when it is running the lamp, for instance, continuously, will last only from 10 to 16 hours. The cost of running the lamp, as you see, is but a little over a cent an hour; and if you use it for a flash-light, to see the time at night, to look into your barrels of seed potatoes, to explore a cave, or any thing of that sort, it may last several weeks. The lamp itself weighs only 6 ounces. As it is attached to the battery by flexible wires you can turn it in any direction, and use it for a single second, a minute, or an hour, as you choose, and it costs nothing to keep when you are not using it. What pleases me most is, it is one of the handsomest pieces of scientific apparatus I ever got hold of. You can pull it all to pieces by just moving springs. No screwdriver or wrench is needed at all.

It is not often that I give such a free advertisement as this; but it seems to me the little apparatus is a great stride in the direction of a portable electric light for a small amount of money. Please remember this is operated by dry batteries. They cost $2.00 a dozen; and after they are run out you just throw them away. I am waiting anxiously for my first one to be exhausted so I can cut it open and see how it is made. You see I am something like the little boy who cut a hole in the bellows with his jack-knife, to see how they made the wind inside.

FOR THE STARVING CUBANS.

I inclose you $1 for the Cuban relief fund.
Browntown, Wis. H. LATHROP.

A. I. Root:—Inclosed find $4.00 which I wish to go to the fund for the Cuban sufferers.
Calamus, Iowa, April 2. LYDIA WAGNER.

After making out my check it was brought to my notice that Ralph P. 5 years old, wanted to send all he had to Cuban sufferers, having heard us read about them, so we send you $10.25 instead of only $10.00.
New Braintree, Mass., Mar. 20. SHEDD BROS.

The A. I. Root Co.:—I have your favor of the 26th, inclosing draft for $24.50, being contributions for the Cuban Relief Fund, as follows: Mr and Mrs. Axtell, $10.00; H. A. Chapman, $4.25; J. T. Shedd, $10.25.

Please express to each of the above-named persons the appreciation of our Committee, and accept for yourselves our thanks for your kindly interest in a matter which the Administration at Washington sees fit to urge as a part of a broader humanitarian policy.

H. A. GARFIELD, Treas.
Cleveland, O., Mar. 28. Cuban Relief Fund.

CONVENTION NOTICE.

The spring meeting of the Northern Illinois Bee-keepers' Association will be held at the residence of Alexander Pattersons, five miles northwest of Rockford, Ill., on Tuesday, May 17. All are cordially invited. B. KENNEDY, Sec.
New Milford, Ill., March 30.

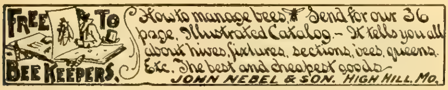
Root's Goods NEAR HOME AT CATALOG PRICES.
Prothero & Arnold,
Du Bois, Pa.

For Sale.

Adel or Italian bees on Quinby suspended frame, f. o. b. in light shipping-boxes, $4.00 each. Blacks and hybrids on L. frames, $3.00 each. No veil used in handling these bees during the past season. No foul brood in these parts. 150 colonies to select from.
CHARLES STEWART, Sammonsville, N. Y.
In writing, mention Gleanings.

TO ONE AND ALL!

QUEENS, strictly five-band or Golden Beauties.
Untested, 50 cents. Tested, $1.00.
TERRAL BROS., Lampasas, Texas.


FREE TO BEE KEEPERS. How to manage bees. Send for our 36 page, Illustrated Catalog.— It tells you all about hives, fixtures, sections, bees, queens, Etc. The best and cheapest goods—
JOHN NEBEL & SON. HIGH HILL, MO.

In writing, mention Gleanings.

FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by
Emerson T. Abbott, St. Joseph, Mo.
Write for *free sample copy now.*
In writing advertisers, mention GLEANINGS.

Second-hand Wheels Cheap.

ONE HARTFORD.
'94 pattern; 28-inch wheels; in good condition; weighs 32 pounds; $12.50.

ONE MONARCH-DEFIANCE.
Gent's model; 28-inch wheels; 22-inch frame; in good condition; weight 25 lbs.; $16.50.

ONE '93 LADIES' CLEVELAND.
28-inch wheels; brake; in fine running order; weight 32 pounds; $15.00.

ONE '95 LADIES' CLEVELAND.
28-inch wheels; in fine order; new tires; weight 25 lbs.; $20.00.

ONE $100 WHEELER.
Gents' model; '96 pattern; keyless cranks; 1⅛-inch tubing; 25-inch frame; Morgan & Wright tires; re-enameled, and in first-class running order; weight 25 pounds; $22.50.

ONE $100 REMINGTON.
This wheel is in excellent condition, and especially adapted for rough riding. Practically a made-to-order wheel; 26-inch frame; new tires. Price $35.00. This is a bargain to any one wishing a first-class wheel cheap.

ONE COLUMBUS, $75 MODEL.
Belonging to A. L. Boyden, '96 pattern, large tubing; ridden one season; weight 25 pounds; re-enameled, and in excellent condition. $20.00.

THE A. I. ROOT CO., Medina, Ohio.

FOR SALE.

Some fine hives of Italian bees, containing queens, brood, and eight-frames—either Hoffman or Simplicity. Price, each, $3.50. Address
JOHN A. THORNTON, Lima, Ill.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

QUEENS. Untested, either 3 or 5 banded, 75c each. My bees are as good as any in this country.
DANIEL WURTH, Falmouth, Rush Co., Ind.

A few hybrid and mismated queens for sale. Hybrid, 30c; mismated, 35c each. Safe arrival. Address
W. J. FOREHAND, Fort Deposit, Ala.

Wants and Exchange Department.

WANTED.—To exchange some extra-fine collie-shepherd pups and some fine game bantam chickens for offers. For prompt reply send postage stamp. W. S. BRILLHART, Oakwood, Ohio.

WANTED.—To exchange 75 to 100 colonies of fine Italian bees in two-story new Heddon hives for timbered land or timber.
O. H. TOWNSEND, Otsego, Mich.

WANTED.—To exchange White Plymouth Rock eggs for Italian queens, foundation, or offers. Eggs $1 for 13. F. R. KOONS, East Boston, N. Y.

WANTED.—At once, to buy an apiary of 50 or 100 swarms. B. F. HOWARD, Hayt's Corners, N. Y.

WANTED.—Rat-terrier dog in exchange for supplies. I want a small rat-terrier, black and tan, not over 12 inches high, for my 7-year-old boy. It must not be more than two years nor less than one year; must be kind, playful, and intelligent. Write me what you have before sending
Address E. R. ROOT, Medina, Ohio.

WANTED.—To exchange rifles, shot-guns, etc., for trio of minks from New England States.
W. S. AMMON, Reading, Pa.

BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

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1898 High Grade BICYCLES

for Men, Women, Girls & Boys. Complete line. *All brand new models.*

$75 'Oakwood' for $32.50
$60 'Arlington' " $24.50
Others at $15, $17 and $20
Juveniles $7.00 to $12.50

No Money in Advance.
WRITE TODAY for SPECIAL OFFER.

Shipped anywhere C.O.D. with privilege to examine. Buy direct from manufacturers, save agents & dealers profits. Large Illus. Catalogue Free. **CASH BUYERS' UNION, 162 W. VanBuren Street, B-345, Chicago, Ills.**

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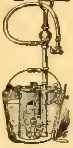

SPRAYING with our new KEROSENE Sprayers is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.
West'n Ag'ts, Henion & Hubbell, Chicago.

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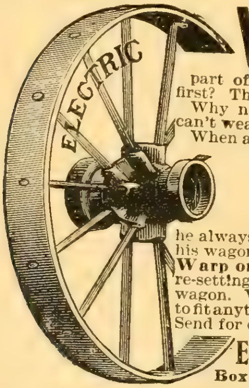

WHAT part of a wagon wears out first? The wheels, of course. Why not buy wheels that can't wear out? When a man buys the

ELECTRIC WHEELS

he always has good wheels on his wagon. **They can't Rot, Warp or become Loose;** no re-setting of tires; they fit any wagon. We also make wheels to fit anything wearing wheels. Send for circulars and prices.

Electric Wheel Co.
Box 95 Quincy, Ills.

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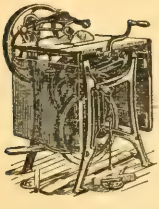

One Man with the UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Calalog free.* 1-24ei

Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

In writing, mention GLEANINGS.

Fay's Currants.

Large stock, nice bushes, $2.50 per 100. Barred P. Rock (Hawkins' noted strains) eggs, 75c per 13, or 26 for $1.25. **FRED H. BURDETT, Clifton, N. Y.**

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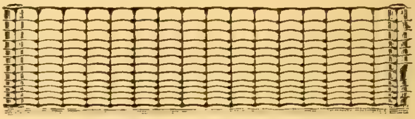

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every spring is needless. No "top rails" to lay up, nor need to chase down the lane after every storm if **Page Fence** is used. Send for "spring styles" and prices. See our ad. in next issue.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

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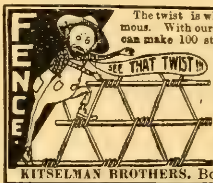

The twist is what makes the Kitselman Fence famous. With our Duplex Automatic Machine you can make 100 styles and 60 rods per day of the Best Woven Wire Fence on Earth, Horse-high, Bull-strong, Pig-tight FOR 18c. PER ROD. Chicken fence 19c. Rabbit-proof fence 16c. and a good Hog fence for 12c. per rod. Plain, Coiled Spring and Barbed Wire to farmers at wholesale prices. Catalogue FREE for the asking. Address.

KITSELMAN BROTHERS. Box 51 Ridgeville, Indiana.

In writing, mention Gleanings.

BOWEN
CABLE STAY FENCE CO

16 to 24 cts. Per Rod.

$10 For a machine to build the cheapest strongest and best fence made of wire. No royalties, no farm rights, machine easily and quickly operated by any farmer. Send for large circulars

Strongest Combination

NORWALK. O.

In writing, mention Gleanings.

WANT MONEY?

Easy to make selling **BEVERIDGE'S Automatic Cooker.** Practical and satisfactory. No scorching, no odor. Saves labor and fuel and fits any stove. **Good pay to agents** of either sex. 2385 sold in one town. Write (P. O. 963),
BEVERIDGE MFG. CO., Baltimore, Md.

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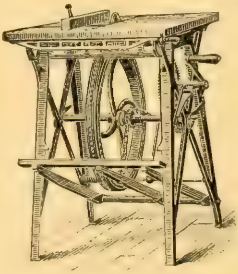

Barnes'
Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.

W. F. & John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

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Honey Column.

CITY MARKETS.

MILWAUKEE.—Although the demand for honey has not been equal to what it was previous to our last report, yet it has kept up very well indeed, and the market seems to be in good order at present and values very well sustained. While the fancy grades are most in demand, the low and medium grades have met a fair attention. But there is one thing we wish to impress upon our shippers, that we are not able to get a fancy price for a No. 2 or inferior grade of honey, yet we always try to get all we can and are opposed to slaughter prices for the sake of making prompt returns. We now quote fancy 1-lb. sections at 11@12; A No. 1 1-lb. sections, 10@11; No. 1 1-lb. sections, 9@10; 1-lb. sections amber, 8@9; 1-lb. sections dark, 7@7½; extracted white in barrels, kegs, and cans, 5½@6; extracted dark and amber, 5@5½; beeswax, 26@28.
A. V. BISHOP & CO.,
April 19. Milwaukee, Wis.

CHICAGO.—Fancy white comb honey would bring 11c, but there is none here; other good grades of white at 9@10; dark and amber, 7@8; extracted white, 5@6; ambers, 4½@5; dark and off grades, 4, with exception of dark candied and amber grades. This market is bare of comb, and, while prices have been low, the quantity sold locally has been greater than last season. Beeswax scarce, and sells at 27c for average lots.
R. A. BURNETT & CO.,
April 19. 163 South Water St., Chicago, Ill.

PHILADELPHIA. — Most of good grades of comb honey cleaned up in this market: some poorer grades, as No. 1, selling at 10c; No. 2, 8@9. Extracted honey moving slowly—dark, 4¼; amber, 5; light, 5½; beeswax, 27. We are producers of honey—do not sell on commission.
WM. A. SELSER,
April 20. 10 Vine St., Philadelphia, Pa.

DENVER.—We are selling best grade of comb honey in our cartons at 11½. There is a cheaper grade on the market, but we do not care to handle it. We are having splendid demand for white extracted honey. We could handle quite a quantity. If parties would send us samples of No. 1 white we will buy same. Can quote prices now at 6c. There is a good demand for beeswax at 25c for choice yellow.
R. K. & J. C. FRISBEE,
April 21. Lock Box 1014, Denver, Col.

KANSAS CITY.—Comb honey is selling fairly well, but prices are low. Quite a lot is showing signs of candying, which makes dealers anxious to sell. We quote fancy white comb, 9@10; No. 1 white, 9; amber, 8@9; extracted white, 5@5½; amber, 5; dark, 3½@4; beeswax, 22@25.
C. C. CLEMONS & CO.
April 20. Kansas City, Mo.

BOSTON. — Honey has been in good demand, and stock is well cleaned up. We quote fancy white, in 1-lb. cartons, 13; No. 1 white, in glass front cases, 11@12; No. 2 white, in glass-front cases, 9@10; extracted white, 6@7; light amber, 5@6.
BLAKE, SCOTT & LEE,
April 20. Boston, Mass.

DETROIT.—Sales are not numerous, and commission men are selling out at lower prices where they can get offers, but are trying to keep up prices same as last quotations; viz., fancy white, 11; No. 1 white, 9@10; fancy dark, 7@8; No. 1 dark, 6@7; extracted white, 5@6; dark, 4@5; beeswax in good demand at 27@28.
April 21. M. H. HUNT, Bell Branch, Mich.

CINCINNATI.—Demand is fair for extracted honey; slow for comb honey. Price for the best white comb honey is nominal at 10@13; extracted brings 3½@6, according to quality. There is a good demand for beeswax at 20@25 for good to choice yellow, on arrival.
CHAS. F. MUTH & SON,
April 19. Cincinnati, O.

BUFFALO. Fancy honey, 10½@11; A No. 1, 10@10½; No. 1, 9@10; No. 2, 7@8; No. 3, 6@6½; buckwheat, 5@6; strained, 5@6; extracted, in jelly-tumblers, 80@90 per dozen; beeswax, 27@28—scarce, and wanted. Demand for honey has been a little more active of late.
W. C. TOWNSEND,
April 17. Buffalo, N. Y.

CHICAGO.—There is a better inquiry for comb, with an active outlet. Fancy white, 1-lb. frames, 11@11½; No. 1, 10@11; amber, 6@8; water white extracted, 5@6; amber, 4½@5; dark, 4; beeswax, 25@27.
AMERICAN BROKERAGE CO.
April 19. Chicago, Ill.

COLUMBUS.—We have had unusually good trade on honey, and have about cleaned up on white and amber; are in position to use shipments of each. Fancy white, 11@12; No. 1, 10; No. 2, 8@9; amber, 8.
THE COLUMBUS COMMISSION & STORAGE CO.,
April 20. 409-413 N. High St., Columbus, O.

CLEVELAND.—We quote our honey market as follows: Fancy white, 12@12½; No. 1 white, 11; No. 1 amber, 9@10; buckwheat, 8; white extracted, 6; amber, 4@5.
A. B. WILLIAMS & CO.,
April 14. 80-82 Broadway, Cleveland, Ohio.

CHAS. ISRAEL & BROS.,
486, 488 & 490 Canal St., Corner Watts St., N. Y.
Honey and Beeswax.
Liberal Advances Made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

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579 The Arcade, CLEVELAND, O.
CALL OR WRITE. ADVICE FREE.

BUGGIES, Carts, Surries, Phætons, Spring Wagons, Harness and Saddles shipped C. O. D. anywhere to anyone with privilege to examine at lowest wholesale prices. Guaranteed as represented or money refunded. Send for illustrated catalog and testimonials Free. Addr. (in full)
CASH BUYERS' UNION, 158 W. Van Buren St., B845 CHICAGO

Low=down Broad=tire Farm Trucks

originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons, and milk-peddlers' wagons. Steel wheel trucks, $18.

Farmers Handy Wagon Co., Saginaw, Mich.

In writing advertisers, mention GLEANINGS.

We are Headquarters for the Albino Bee. The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italians, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

Prosperity

It is here, and still coming. So are the **carloads of bee=keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
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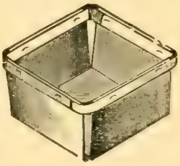

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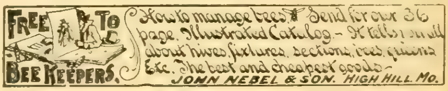

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For Sale. 10-inch Foundation-mill; 1 saw-arbor, No. 1 order.
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S. C. BROWN LEGHORNS. 13 eggs, 75c; 26, $1.00; good stock. Also pure Italian bees. Circular free. H. M. MOYER, Shanesville, Berks Co., Pa.

UNTESTED ITALIAN QUEENS 70 cents each, 3 for $2.00; tested, $1.00 each. Satisfaction guaranteed by return mail. THEODORE BENDER, Canton, Ohio.

CONVENTION NOTICE.

The spring meeting of the Northern Illinois Bee-keepers' Association will be held at the residence of Alexander Pattersons, five miles northwest of Rockford, Ill., on Tuesday, May 17. All are cordially invited. B. KENNEDY, Sec.

New Milford, Ill., March 30.

KIND WORDS FROM OUR CUSTOMERS.

Mr. Root.—Seeds ordered of your firm came to hand in good condition. Potatoes shipped us April 1 arrived in safety in spite of the cold. Carman No. 3 are beautiful stock. Maule's Thoroughbred are fine shape for an extra early. During the week we will order a little more stuff—seeds, plants, and apiarian supplies, as we can depend on honest goods, gospel measure, and square dealing every time.

Hopedale, O., Apr. 11. D. H. WELCH.

"IT DON'T TASTE GOOD."

Sometimes when an old subscriber has been unfortunate in the way of sickness or otherwise, in consideration of his having been with us for a good many years we have sometimes sent our journal for a short time free of charge, rather than to have it stopped entirely. Below is a report of one of these old friends of ours:

Mr. Root: — I suppose you thought you would never get that dollar for GLEANINGS for 1897, and that old Johnson is a "rascal." Be that as it may, an honest man will pay if he can. Please find inclosed $1.50. One dollar of it is for the year I am behind, and the 50 cents is for the six months you sent it free. It don't taste good to read unless it is paid for.

Ellenboro, W. Va., March 22. G. B. JOHNSON.

3c a lb. Advance on Comb Foundation
Both wholesale and retail, taking effect April 20th, is announced by
Chas. Dadant & Son, - Hamilton, Ill.

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ONE $100 VICTOR.
Gents' model; '95 pattern; weight 27 lbs.; in fine running order; 70 gear; 28-inch wheels; $15.00.

ONE HARTFORD.
'94 pattern; 28-inch wheels; in good condition; weighs 32 pounds; $10.00.

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Gent's model; 28-inch wheels; 22-inch frame; in good condition; weight 25 lbs.; $16.50.

ONE '93 LADIES' CLEVELAND.
28-inch wheels; brake; in fine running order; weight 32 pounds; $15.00.

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28-inch wheels; in fine order; new tires; weight 25 lbs.; $20.00.

ONE $100 WHEELER.
Gents' model; '96 pattern; keyless cranks; 1⅛-inch tubing; 25-inch frame; Morgan & Wright tires; re-enameled, and in first-class running order; weight 25 pounds; $22.50.

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Dollar Eggs? Yes, after June 1st we will sell all eggs at half price, $1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmas, Langshans, White Wyandottes, Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

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Established 15 years.

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"Queens."

Gray Carniolans and Golden Italians. We are headquarters for above races.

Grade & Prices of Queens.	May & June	After July 1.
Untested queen	$ .75	$ .65
Tested queen	1.50	1.25
Select tested queen	2.50	2.25
Best imported queen	5.00	4.00

Write for prices on nuclei and full colony. Descriptive price list free.

F. A. Lockhart & Co., L. George, N. Y.

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LOOK HERE, BEE-KEEPERS! We manufacture all kinds of apiarian supplies; also the New-idea section. Please mail us an order.
J. B. MURRAY, Ada, Ohio.

Italian Bees and Queens.
Queens, $1.00; bees by the pound, $1.00; nuclei, two-frame with queen, $2.00; one-frame, $1.50; full colonies, $5.00. Also fancy poultry.
MRS. A. A. SIMPSON, Swarts, Pa.

IF YOU WANT QUEENS
That will give satisfaction in the way of big colonies, that are gentle, and the best of honey-gatherers, try our strain of Italians. Tested queens, $1.00; untested queens, 75 cts. each; $8.00 per dozen.
J. W. K. SHAW & CO., Loreauville, La.

Send for Catalog.
15 Barred Plymouth Rock eggs, 50 cts. Golden Italian queens and bee-keepers' supplies cheap.
J. F. Michael, Greenville, Ohio.

EGGS from No. 1, pure-bred, farm-raised, Silver Wyandottes, Golden Wyandottes, White Wyandottes, and White P. Rocks, 13 for $1.00; 30 for $2.00. Seventeen years a breeder. Circular free.
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QUEENS. **Superior Italian.** From best golden and imported. Untested, 70 cts. each; six for $4.00. Select tested, $1.00 each. Fine breeding queens, $2.50 each.
E. A. SEELEY, Bloomer, Ark.
P. O. M. O. office, Lavaca, Ark.

Wants and Exchange Department.

WANTED.—To exchange 75 to 100 colonies of fine Italian bees in two-story new Heddon hives for timbered land or timber.
O. H. TOWNSEND, Otsego, Mich.

WANTED.—Two hundred Italian queens between the 1st and 20th of June, for which I will exchange extracted honey. How many can you furnish?
E. W. ALEXANDER, Delanson, Schen. Co., N. Y.

WANTED.—To exchange Winchester rifle, 22 rifle, and McCormick self-binder, for queens and nuclei.
B. W. HOPPER, La Junta, Colo.

TWO SPECIAL OFFERS.

As explained in former ads., publishers can afford to put forth extra efforts in securing *new* subscribers, as the majority remain, once they become subscribers to a *good* journal. It is from this point of view that I make the following offers :

OFFER NO. 1.

To any one not a subscriber to the Review who will send me $3.00 I will send the Review for 1898, and 1000 strictly first class snow-white one-piece sections. After accepting this offer, if any one wishes to buy more sections I will furnish them at the following prices: 1000 for $2.75; 2000 for $5.25; 3000 for $7.50; 5000 for $12.00. Sections will be shipped from any of the following points: Flint, Mich.; Chicago, Ill.; Medina, Ohio; Jamestown, N. Y.; Higginsville, Mo., or Omaha, Neb.

OFFER NO. 2.

To any one not a subscriber to the Review, who will send me $1.50, I will send the Review one year and a fine TESTED Italian queen. Purchasers may have either the bright golden strain, or the dark leather-colored reared from imported mothers. After accepting this offer, if any one wishes more queens they will be furnished at the following prices: Single queen 90cts.; 3 for $2.65; 6 for $5.00; 12 or more at 75 cts. each. Orders will be filled in rotation, and safe arrival guaranteed.

Unless otherwise ordered, subscriptions will begin with the Jan. issue; and the Dec., 1897, number will also be sent free. If you are not acquainted with the Review, and wish to see it before subscribing, send ten cents for three late but different issues, and the ten cents may apply on any subscription sent in during 1898.

W. Z. HUTCHINSON, Flint, Mich.

$100

Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,** or F. DANZENBAKER, Box 466, Washington, D. C.

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Root's Goods *NEAR HOME AT CATALOG PRICES.* **Prothero & Arnold, Du Bois, Pa.**

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Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

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Smoke Engine (largest smoker made.)	4-inch stove.	Doz. $13.00;	each, by mail,	$1.50
Doctor	3½-in.	" " 9.00;	"	1.10
Conqueror	3-in.	" " 6.50;	"	1.00
Large	2½-in.	" " 5.00;	"	.90
Plain	2-in.	" " 4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	" " 4.50;	"	.60
Honey-knife		" 6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.

Direct-Draft Perfect
BINGHAM
BeeSmoker
PATENTED 1878, 1882 and 1892

Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

In writing advertisers, mention GLEANINGS.

DID YOU SEE IT?

See What?

Why, that full-page advertisement of the *American Bee Journal*, on page 289 of GLEANINGS for April 15? That offer is still open. Better turn back to it, and read it. It will pay you. Send your address for *free* sample copy of the old weekly *American Bee Journal*, and also get information about our fine bee-book offer.

GEO. W. YORK, = = 118 Michigan St., Chicago, Ill.

GLEANINGS IN BEE CULTURE
A Journal devoted to Bees and Honey and Home Interests.
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio.

Vol. XXVI. MAY 1, 1898. No. 9

STRAY STRAWS FROM DR C. C. MILLER

My wife is sorry for Thos. McDonald $5.00 worth. Charge to my account.

One reason for cleats on hives is to strengthen the thin and weak place left by the rabbet. Without the cleat it is easily split off.

Beeswax from old combs will be much lighter if you first soak the combs several days, occasionally stirring and renewing the water.—*Le Rucher Belge.*

Wm. H. Eagerty must have misunderstood my plan of wetting sections, p. 308. Only the grooves are wet, the sections being packed solidly together, and there is no trouble about foundation falling down. But it's much better to have sections that don't need dampening.

"Criticism of the right kind, that which is fair and fearless, can do much good," says Hutchinson, so he's going to have a department of that kind, and he has a good man to run it, R. L. Taylor. If I had known about it I would have been more respectful to the Hon. R. L.

Ventilation from between super and hive, p. 307, is in some respects an excellent thing. I used it for years, producing thousands of beautiful sections. But the bees are very slow to finish the row of sections next to the ventilation, so I, with no little regret, abandoned it. For extracting I suspect it beats blocking up.

"Prove your faith by your works," says a footnote, page 292, with reference to long-tongued bees. Why, bless your heart, aren't the works of friend Ritchey any proof? [I am glad if friend Ritchey has done something toward getting bees with longer tongues; but, doctor, why not prove your individual faith by your individual works?—Ed.]

Hasty is after you, Ernest, for your deliverance, p. 55. He says, "The eight-section holder shows no signs of turning up its toes in my apiary." Doesn't Doolittle also use it? With hybrid bees and proper management, Hasty thinks it's nonsense to say there's any trouble to get storing begun, when there's any thing to store. I had no trouble, no matter what bees. [No; Doolittle uses a single-tier wide frame—the same he has always used. It was illustrated on page 803 last year.—Ed.]

M. A. Gill wants me to raise either the yield or the number of colonies I think "can be kept in a good location in Illinois," p. 303. But, friend Gill, I was talking about an average location, not a good one. I'd give a lot to believe I can keep 200 colonies profitably in one apiary. I'd like to know the facts. Friend Gill, give us the name of several who have kept 200 in one apiary in Illinois, and I'll be glad to revamp my answer.

A cylinder or a disk having a surface like a coarse rasp would be cheaper than one with sandpaper for a section-cleaner, for, instead of fresh sandpaper, you'd merely throw it in hot water. With motion sufficiently rapid the surface might be very coarse. [I am not sure, doctor, but there is something in your idea; but I am not sure, on the other hand, that it is so easy to dip the cylinder into hot water. A jet of steam might, perhaps, do just as well. —Ed.]

"I'd like to try it," said my wife, with much interest when I read that item of E. D. Howell, p. 306, about canning fruit in honey. [I have been trying to persuade my wife to use honey more in our cookery. She has tried it in rice pudding, and I must say we think it is better, even including my better half. I have been wondering if any other thing would not taste better if sweetened with honey rather than sugar. Occasionally I use honey in postum cereal or caramel coffee, and I do not see why it is not every bit as good as sugar.—Ed.]

An unfair advantage you take of me, Mr. Editor, p. 293. I said people believed a thing just because it was editorial, and then *editorially* you hint I don't know what I'm talking about, and I might as well have kept my mouth shut. Say, what'll you take to let me sign "Ed." to what I say whenever I want to knock you out? [Look here, doctor, you are an editor yourself. You help edit the *Bee Journal* and Gleanings, and so I see no impropriety in your sticking on "Ed." whenever you like.—Ed.]

Anxiety about foul brood in foundation ought to be set at rest, according to the report of Ontario Experiment Station. Foul-brood germs were incorporated with wax which was barely melted and at once cooled and made into foundation. Full sheets of this were put into six colonies, but no sign of disease followed. [There can be no question on this point, although for my own purpose I should rather burn the combs, because I think it is cheaper than to try to save the wax. Diseased combs ought to be destroyed, or rendered aseptic at once. Actual burning does both.—ED.]

IT ISN'T RIGHT, according to A. I. Root, p. 317, "to be a party to even an *appearance* of untruth." That reminds me of the way Hasty, in *Review*, goes for Doolittle and E. R. Root for what they say on page 175. I esteem and love the two men named, but I want to say in all kindness that I believe if they'll look closely into the morality involved in that veneering business they'll both see that it's rotten, rotten, rotten. [I suspect you are right, doctor; but I do not see how you and the rest of the chaps put me on the same side of the fence with Doolittle. I supposed I was on the tiptopest part of the fence—tried to get there, anyhow. Well, see my answer to articles by Whitney, Doolittle, and Thompson, in another column.—ED.]

"I LAY IT DOWN as a safe and imperative rule for kitchen use—*Never stand when you can do your work as well sitting*," says Marion Harland in *Common Sense in the Household*. The rule is just as good for bee-work as for kitchen use, and I thought of it when I looked at that picture on p. 299. Might just as well sit comfortably while scraping honey. [It is only fair to state that friend Boomhower's boys do use chairs in scraping sections. The photo that I took of them was an interior view, and rather indistinct; and our artist, in reproducing the picture, made the operator standing when he should be sitting. Yes, indeed, I believe most heartily in the rule that we should sit down at our work whenever a sitting posture will not interfere with the quantity and quality of the work.—ED.]

IN *Bulletin de la Somme* is gravely given a warning against American honey. "This deplorable honey, under the name of paraffine wax (!), is imported from the U. S., where it is made in Boston." "The combs, with their cells, are made by a machine, like foundation, with a mixture of very white paraffine, extracted from petroleum, and wax. The cells are filled with glucose perfumed with essence of clover and thyme; a hot iron delicately passed over the cells seals them," and there you are. Now, why don't the *Bulletin* send a pound to A. I. Root and get $1000? [Tell your *Bulletin de la Som*—what you call it?—that we have $1000 waiting for them providing they can give *proof* of their assertions. You did not give us their full name and address, or we might write them, giving them a little "sass" back, properly peppered.—ED.]

JAMES CORMAC, p. 297, indorsed by a footnote, thinks a sudden stoppage of the honey-flow, where hives are raised on four blocks, might cause trouble "that would set the whole apiary wild on account of robbing." One would naturally think so, but such is not the case. My hives remained blocked up till late last year, and seemed just as safe as if all let down. I think a three-frame nucleus would be safe blocked up an inch, *provided* there was no change in place or appearance. But on a sudden stoppage, hoist a hive or change its location and you'll have fun. [In that same footnote to which you refer, you will note that I did not believe myself that there would be any danger from robbing, *providing* colonies were strong enough. But your testimony is valuable in that it shows that bees become accustomed to large entrances, and will defend them, even after the honey-flow stops.—ED.]

I DON'T THINK stopping the sub-ventilator last winter made fire unnecessary. The winter was unusually mild, and, besides, a larger number of bees may have helped to keep up the heat. I think as much as ever of fire when the temperature is low. [Are you sure, doctor—real sure—that fire is absolutely necessary in your cellar under any circumstances? and do you know of any other person besides yourself who makes a practice of using fire in the cellar? and is it not true that some, knowing that you use fires, will put a stove in their own cellar, and make matters worse rather than better? Bees sometimes winter under what might seem to us to be very unfavorable conditions. Take, for instance, the good wintering in that dugout of Harry Lathrop's, in Wisconsin, where there are several inches of water in the bottom of the cellar. There are no sub-earth ventilators, neither is there a stove to create artificial ventilation or to raise or lower the temperature; and yet he says his bees wintered perfectly.—ED.]

A GENERAL FEELING seems to prevail that the bee-journals ought to warn us against shaky firms. But how, and be safe? Root and York say, tell on 'em and let us guess their names. Hutchinson says, tell their names and let us guess they're bad. If you know enough to make you suspicious, why under the sun can't you tell what *you* know? If I sell honey to a man and can't get my pay, is there any law in the land that will hurt me for telling the plain truth? [I suspect the fact of the matter is, doctor, it would not be wise to follow the York-Root policy invariably, nor the Hutchinson. Sometimes it may be advisable to tell about firms without giving their names, and sometimes it may be advisable to give the names and a mere inkling of the transaction. I have two cases right before me now. Two commission houses have failed to answer letters regarding consignments of honey shipped to them, notwithstanding the consignors have written them a number of times. The firms are reputable and honest. To publish their names, and give an inkling of the transactions, might be doing them a manifest injustice. I suspect that, when we get right down to the bottom of it, some clerk, to save his neck, has been pigeonholing the correspondence, or that one or two letters have been mislaid; but if there is a commission house that fails to answer letters, and defends this kind of policy, I do not know but I should be tempted to give the name, and let bee-keepers draw their own conclusions. I tell you, doctor, if you could stand in the shoes of York, Hutchinson, and even of my own poor self, may be you would think that the policy we have all pursued is not far from what you would have carried out yourself. It is not always a question of whether we shall be sued for libel, but it is a question as to whether we might be doing some one an injustice.—ED.]

GENERAL CORRESPONDENCE

FACING COMB HONEY.

Doolittle's Position Scored.

BY W. M. WHITNEY.

Editor Gleanings:—I have just read an article from the pen of Mr. G. M. Doolittle, on page 174 of your journal, and to a portion of the same, under the head of "Facing Comb Honey," I desire to give a few moments' attention.

I have no objection to make to his manner of crating XXX honey, when the whole in the crate bears the test; but when he says, "And I also claim that there is nothing out of the way, if any one chooses to do so, in shipping cases of honey having XXX faces and XX or X honey inside, on commission. Yes, more: I claim that there would be nothing wrong in filling the center of the case with buckwheat honey, the same having XXX white-honey facing, providing it was shipped on commission, every case alike, and the producer thought it to his interest to do so. I should doubt the wisdom of such a course; but I can not see that such a thing would be dishonest."

Now, Mr. Editor, I have carefully read the above statement, wiped my spectacles, fearing I read it wrongly, or, rather, hoping I had, and read it over again. Now, I venture the assertion that neither Mr. Doolittle nor any other reputable bee-keeper would risk his reputation as an honest honey-producer by putting up his crop in that manner, even though he shipped it on commission. I can discover no difference between shipping to the consumer direct and to a commission house, so far as honesty of packing is concerned. There seems to be quite a strong desire on the part of many shippers to make the poor commission man a scape-goat for their sins; and, again, I fail to see what the fact, that "the producer thought it to his interest to do so" has to do with the honesty of the transaction. If a man may put up a crate of honey with XXX faces, and XX or X behind them, or buckwheat honey, he might any kind of honey, however poor, back of them; and, if he saw fit, he could vary the combination behind the facing as he saw fit, whether he shipped one or a dozen cases, and be equally honest.

If the facing in a case is not to be taken as an index of what it contains, why should one case be used as a sample for any other?

The writer of the language quoted above says he has his sleeves rolled up; but I suppose from the context his arms were stripped for another kind of battle; but if they are yet bare he might as well leave them so, for mine are also stripped to the shoulder to meet him half way. Yes, I will go all the way to Borodino, and dare him into the middle of the road. Don't let anybody be afraid now; there will be no blood shed on the proposition of honesty of the bee-keeper who crates his honey in the manner above described, whether he ships direct to the consumer, or on commission.

I have read Mr. Snyder's article on "Facing Comb Honey," to which Mr. Doolittle refers; and, so far as it bears upon this subject, I indorse every word he says. The facing is put where it can be seen for a *purpose*, and not, as Mr. Editor says in footnote to article by Mr. Snyder, "unconsciously put to the front because it is so beautiful, and not for the purpose of deception." Now, that is entirely too charitable; or are these words sarcasm?

If a lot of poor stuff is put behind prime stock used as facing, no better evidence of intention to deceive could be presented, for it would convict the guilty party of an attempt to defraud, in any court in the country.

Why the glass front in the shipping-cases? To show the quality of the honey, of course. What else could it be for? It says, as plainly as words could express, "See what a nice case of honey." But Mr. D. says, "The commission man is supposed to open the case and show the honey." But suppose he does not do that. He also says, "He is to use judgment, and sell to the best advantage of the consignor." Then, most assuredly, he will not open the case if he suspects any "unconscious" putting to the front of "beautiful sections."

Scores—yes, hundreds of persons are unsuspecting enough to take the off-hand statements of the commission man; and, for any one of a dozen reasons which might be named, do not stop to examine minutely the goods purchased, but find later that they are the victims of a downright swindle. Now, who is the swindler—the commission man or the packer and shipper? But Mr. D. says, "The buyer should examine the honey." Very true; he should have done so; why? Because some people cheat in packing; he will be likely to do so next time; but does the fact that the buyer neglected to examine the goods change the culpability of the producer, and render him any the less dishonest?

Pray tell me how honey faced XXX and backed with XX or X is to be graded? Or will you, as Mr. D. says you can do in grading and marking honey, put a "secret mark in the handholes" or in some other sly place, "out of sight of any one except the one who is in the secret"?

Human nature is much the same, whether you find it in the honey-producer, the apple, peach, or berry grower; and if a man would face up his honey so as to deceive the unsuspecting he would face up his apple-barrel with prime stock, and fill in the center with windfalls and culls; or he would "unconsciously" put the best peaches at the corners of the box or crate, where their "rosy cheeks" could be seen, you know; or he would just as "unconsciously" put scarlet gauze (he has an eye for the beautiful, you know) over a basket of miserably poor green peaches.

It is a mystery to me why he does not some time select a covering of blue; it's "beautiful," and some people admire the color much more than red; or why he does not some time select a facing of buckwheat or goldenrod honey. I've seen sections which were much more to be admired for color than the whitest sweet-clover honey I ever saw. But some people do such unaccountable things so *unconsciencely* that they in time, I suppose, do them "unconsciously."

Now, suppose the commission man is dishonest, and that he has his "secret mark" given by the shipper, and that he intends to use his best judgment in selling "to the best advantage of the consignor." He purposely avoids opening the shipment, and while not guaranteeing the contents, yet he makes such representations as to make the sale, knowing, of course, what the quality of the contents is, by the "secret mark put where none but himself and the shipper" could readily discover it.

It is just such practices as this that have brought the producer and commission merchant into disgrace with consumers. Every honest man should put his heel upon every such transaction as he would upon the head of a viper, and assist in stamping out the whole disreputable business. To adopt the practice referred to, and carry it into every avenue of business, would make us a nation of cheats and swindlers. Perhaps some may think this pretty severe talk; but no milder terms can be used and state the truth; much more severe language might be properly applied.

There is more than one way to lie. We can lie fully as effectually by looks or actions as by words. If a case of honey faced with XXX sections does not tell you as plainly as any words could what the case contains, why is it faced at all? Thus facing honey, with poorer quality back of it, and putting up apples, peaches, or any thing else in a deceptive manner, is *lying*, pure and simple, and lying in a business transaction is dishonest. We should not charge our commission men with dishonest tricks, and at the same time place before them such object-lessons as the cases cited.

It has become quite too common for mankind, even in the more enlightened communities, to "consider it perfectly honest, if they felt it to be their interest to do so," to do that which they would not tolerate in others, without the least regard for the interests of the other fellow; and it is time the seal of condemnation were put on the whole business.

Now, Mr. Editor, I have not said a tithe of what I want to say, for I can cite scores of cases such as Mr. Snyder mentioned, which have come under my own observation; but I must close, for I have taken too much of your time and space already; but you are somewhat to blame. You invited us bee-keepers into the arena on this subject, and hoped it would be "aired a little." I hope it will not only be aired a little, but a good deal. I want to know whether bee-keepers in general take the same view expressed by Mr. Doolittle or not. If they do, then I stand alone; and, rather than join the crowd, I will brimstone my bees and go out of the business. I am sorry that you, in footnotes, apologetically assented to the false doctrine.

Garlo, O., March 15.

[As I have been on both sides of the fence, and didn't know which side I was then on, I I wrote Doolittle to put on a footnote; that I would let him "have it out with him," and *I* would look on. Well, here I am on the top rail of the fence, looking on.—ED.]

DOOLITTLE'S REPLY.

Some years ago, at a certain bee convention, there was a certain commission merchant who exhibited two sections of partly unsealed buckwheat honey which he said he found, with many others of like sort, in cases which showed only clover honey from the "face" side, or glass front. He then went into a tirade of abuse regarding any bee-keeper who would do such a thing. Believing the bee-keeper who had sent the honey was present, I thought to draw out the commission man a little; so, after he had sat down I was granted the privilege of asking him a few questions, as follows:

"Did the bee-keeper of whom you received the honey sell it to you as A No. 1 clover honey?"

"No"

"Did he write you that it was all No. 1 clover honey?"

"No."

"Did he say any thing about the quality?"

"No."

"Is it not your business to sell whatever is consigned you to sell on commission?"

"Yes."

"Have you sold any of those cases you were speaking about as A No. 1 clover honey?"

"No."

"Will you tell us why?"

"Because it is my business to see what there is in any box, barrel, or basket, which is sent with no mark to show what it is, how it is packed, etc., so I can tell any customer (or show him if he requires) just what he is buying. Failing to do this, I am held responsible."

"Then you are *really* the salesman, and not the one who ships you the goods?"

"Yes, of course. Why did you ask that question?"

"Because you denounced the bee-keeper who sent you that honey, *without any mark* as to what the case contained, as a fraud; and, from your own story, *you* would have been the fraud unless you sold the honey for such as it *proved* to be after you had opened it. Am I not right?"

He admitted that I was. This is as near as I can tell of a matter that happened some 20 years ago. When I *sell* a thing, stating it so and so, if I misrepresent, then I am "lying," as Mr. Whitney well says. But when I ship a thing on commission, the commission man does the *selling*, and sells the thing for what it *proves* to be, unless I tell him he need not open it, as I *guarantee* it to be so and so. In this last case he sells it on *my* guarantee, so is in no way responsible in the matter. So I repeat again, "that I see nothing *dishonest* in the matter of facing buckwheat honey with XXX clover honey, but doubt the advisability of doing so," for the reason that the retailer who bought a case of honey fixed that way would expect to get it for enough less to pay him for all sorting and trouble in the matter. If honey, not guaranteed to be of a certain quality (or apples, peaches, potatoes, etc.), is sold without any investigation regarding the matter (simply by the looks of the barrel, bale, box, case, etc.), then I must have been wrongly informed in these matters. Where no guarantee is made, the looks of any single article which is in sight speaks only for itself, not for what is out of sight; and the out-of-sight one says, "Here am I," when it bobs up; "sell me for what I am worth." I think this explanation will cause Mr. W. to roll down his sleeves and regret having waded through the mud all the way to Borodino unless he proves to be somewhat like little Eddie, who thought to vindicate himself thus:

A few evenings ago little Eddie, whose other name is not necessary to the purpose of this narrative, astonished his mother by informing her that he had met a bear while returning from the drugstore, whither he had been sent upon an errand.

"Why, Eddie!" exclaimed the astonished mother, "you know that isn't so. You didn't meet a bear."

"Yes, but I did," Eddie persisted.

"Eddie," said Mrs. Blank, "I am very sorry that you are so naughty. You know that it is wicked to tell such stories. This evening, when you say your prayers, you must ask God to forgive you."

Next morning Eddie presented himself at breakfast with a determined expression on his face; and when his mother asked him if he had prayed to be forgiven he replied:

"Yes, mamma; and God said he saw the same bear." G. M. DOOLITTLE.

Borodino, N. Y.

[It is true I wrote Doolittle that I did not care to take a hand on either side of this discussion, and that I would leave him to have it out with friend Whitney; but since reading the cold print over two or three times—that is, that sentence taken from Doolittle—in Mr. Whitney's second paragraph—I have concluded that I had better come down off from that fence, and get on Whitney's side. The second reading of the sentence or sentences in question seems "worser" than at first, and I don't believe friend Doolittle himself really intended to stand by what his own words really imply. It seems to me the point is right here: No matter whether the shipper says any thing about the contents of his cases of honey, and no matter whether he puts any trademark or grading on them, the general public would naturally assume that the *facing* of the cases was at least of the same kind of honey, and of very nearly the same grade (perhaps not quite) as that in the center.

While I acknowledge there is much truth in what Mr. Doolittle says above, yet the real question hinges on this: What do buyers expect? If it is the rule and not the exception to have buckwheat honey stuck into the center of cases having facings of white-clover comb honey, Doolittle's idea *may be* all right; but *if* it is a general rule in the trade that the center of the cases should be of the same kind, and very near the same quality, as the facing of the case, then Doolittle *is all wrong*. If I am any judge, the trade expects no buckwheat or other dark honey in the center of a case faced with nice white clover; therefore I am ferninst Doolittle, and with Snyder, Miller, Whitney, *et al.*

But here is something to the point.—ED.]

* * *

FACING COMB HONEY NOT HONEST.

Is the "They all do it" a Good Rule?

BY F. L. THOMPSON.

An important feature of the discussion on "facing" comb honey has been recently overlooked; viz., to apply the "golden rule" and see how you come out. I bought a barrel of apples last winter. The commission man did not remove the top ones to show me the center of the barrel; indeed, I question whether that is often done in selling to a private customer. It would have suited me much better, when paying the money, to feel that a glance of the eye at the top of the barrel told me all I wanted to know about the whole barrel. There is no rule to tell me whether the central apples are only a little less choice than the upper ones, or greatly inferior; and the practice which leaves the customer in that uncertainty is, it seems to me, reprehensible.

Those who buy to sell again may approve, or even desire, this state of things. But I have generally heard *consumers* refer to the "facing" of fruit, potatoes, etc., in somewhat disgusted tones. I wonder why; for humorous effect, is it? I should say the practice is, on the face of it, of a piece with all the rest of that looking out for number one which makes the relation between buyer and seller such a hard, pitiless affair, which a person of any sensibility, forced to engage in mercantile life, must continually deplore. It is surely a mistake to suppose that those to whose interest it is to know the truth about what they want to purchase, at once, and thoroughly, can lend their sanction to the practice by "demanding" it, as one writer in his zeal recently phrased it. The retail buyer is at the other end of the line from us; but he has rights, no less than the retail dealer and wholesale dealer. What the honest grocer thinks of the practice is well illustrated on page 83. But suppose we grant that many *grocers* "demand" faced honey, overlooking for the moment the superior rights of the retail buyer. (The writer referred to would apparently overlook them altogether.) What do those grocers want faced honey for? Display? If so, then of course they want the display to last as long as they have the honey. That means that the "facers" are sold last, and that means that the customers are tempted by the front sections, but get the rear ones—precisely the same *effect* that would be produced if that less worthy motive was kept in view in the first place. I know of one grocery where just that thing was done, and should not be surprised to learn that it was a common practice. Some will say, "If we don't do it, the grocers will." Page 83 shows that some grocers will not; and for the rest, if they want to have their comb honey faced, let them do it themselves. Let us keep our hands clean.

It is useless to argue that the customers are to look out for their own interests; that, as *nearly* all expect it, the rest must follow suit, or suffer for it. That most people expect sharp practice is no reason why it is perfectly right to satisfy their expectations. If I expect to be waylaid in passing through a back street, nevertheless no one is justified in actually taking my purse. A few, moreover, in their innocence, do not expect to be fleeced; so that, in their case, there is not even the shadow of an argument for the operation. What essential difference exists between the effects of *selling* and *buying* that which is for that which is not?

It may be said that the customer may always insist on having his pick of the lot. Theoretically this is so; but in practice either the honey-case is out of reach behind the counter, and the customer doesn't like to make trouble, or he is in a hurry, and doesn't want to bother, or is thinking about the rest of his order, etc.; so that I question whether in as many as half the cases the customer gets what he supposes he will, by a glance at the front of the honey-case. If this is true, what shall we say of the half who thus get left? Shall we say they *ought* to have looked out for their own interests? Sounds very fine; but just extend the principle to larger interests—bank deposits, for instance—and apply it to yourself instead of some one else, and see how you like it.

The head and front of the argument for facing is that it is customary—"they all do it." The rottenness of this excuse is apparent. I once asked the hired man of a neighbor why he always let the ditch water run into the reservoirs at night only. He replied it was in order to get ahead of the ditch company, which did not allow water to be used for reservoirs just then. I didn't say any thing. Apparently he interpreted my silence as disapproval, which it was), for he went on to say that *everybody* did it; "and," said he, in just those words, "what *everybody* does is right." This is like the argument some one used for the L. frame—"To my mind, what is approved by the majority is worthy of approval." Now, "to my mind," a more worthless argument (considered logically only, overlooking the moral aspects), can hardly be imagined. Who are "the majority"? The incompetent, of course. Those who don't think, who follow their impulses, who are like sheep, all doing what one does. It is only the few who think. "The majority is *always* wrong," says a character in a drama of Ibsen's. A French lawyer, being applauded by the crowd, asked, "What foolish utterance have I been guilty of?" The only "majority" argument worth considering is the majority of the competent—which is but seldom equivalent to "the majority of all," and certainly not in questions of universal justice, like the one under consideration. Breadths and charity are not yet at the bidding of the mob.

It seems to be implied that, if the customer is not verbally informed that the honey is uniform, when it is not, one's conscience may be free. That reminds me of the man who excused himself for putting a traveler on the wrong road by affirming that he did not *say* it was the right one, but just pointed it out with his thumb.

Finally, we are told that, if intentional deception is not used, the practice is all right. Just what do we imply, I should like to ask, by the common phrase "wrong actions"? Is it not that an action may be intrinsically unjustifiable, irrespective of the agent? We are not now discussing persons. We are arguing whether a certain practice will or will not have evil effects. If it does, it does not necessarily follow that the person responsible for it is dishonest. He may be mistaken; although, if we did not know the man, we should think it *likely* he was dishonest. But that is a side issue, not the main point. Why should we assume that, if some *think* they are right, they *are* right? A pretty pickle society would be in by consistently adopting that principle.

My practice is to first grade the honey, then pack it, entirely regardless of "faces," but taking the sections just as they come, except that occasionally, when an uncommonly good-looking side of a section happens to be turned out in front, I take the pains to turn it in again, so as to be sure not to give the wrong impression. By this means a glance at the front tells the whole story. I consider that method the only honest one. Mr. Snyder's attitude is just right.

Montrose, Col.

[Now, then, it seems to me we have taken a good deal of space on this question, and we had better draw the discussion to a close—that is, unless Mr. Doolittle cares to have something more to say. He is as honest as any man in our ranks, and would not be a party to any scheme that would favor deception in a business transaction.—Ed.]

SECTION-CLEANING MACHINES.

A Discussion of the Various Principles Involved.

BY J. E. CRANE.

Editor Gleanings: — I thought I ought to sit down this morning and have a plain talk with you about the forthcoming section-cleaning machine. Four or five illustrations have appeared in our bee-journals, and I fear none are of much practical value except for the new plain sections. But as perhaps ninety-nine out of every one hundred sections made are of the old style, with wide sides and narrow top and bottom, the cleaning-machines so far illustrated do not promise much help except in polishing the outsides, unless it be Mr. Golden's band or belted cleaner; and even this, it seems to me, has some serious objections.

To begin with, the use of sandpaper to clean propolis seems objectionable in that it is likely to gum up quickly. Although this has been suggested two or three times in our journals, I have so far seen nothing in print from those who have used these machines, pro or con.

As it is propolis we want to get rid of first of all, it would seem a most important question whether sandpaper will answer for this purpose or not; so I wrote to Mr. Aspinwall some time last month. In his reply he says, "Sandpaper is of no use. It will gum in cleaning 20 or 30 sections, and must be glued, otherwise any breakage will injure the comb honey. Emery cloth needs no gluing, but will gum the same." I will not quote more, as he has prepared a paper on this subject for the March *Review*, and I do not wish to steal his thunder.

For cleaning or polishing the sections after the propolis is largely removed, or for sections quite free from this sticky product of the bees, especially the outsides of sections, nothing would seem to be better than a sandpaper disk. Sandpaper is used very extensively in wood-factories in this way; but for cleaning the edges of sections it will be seen at once that the disk will not come within an eighth of an inch of the edge of top and bottom of the old-style sections; and you may remember that, with the sections with sides wider than top and bottom, we usually get the most propolis on the edges of top and bottom pieces, and on the inside edges of the sides. I fear it will not save much time if we have to go over and clean these edges with a knife after we have used a machine. Mr. Aspinwall's roll, as illustrated, does not look as though it could be made to do quite a clean job on the old-style sections

There seems to me another objection to the sandpaper disk for cleaning the edges of the plain sections, even if we were sure it would not gum up. I find the space in old-style sections between the comb (when filled and capped) and separator is just $\frac{3}{16}$ of an inch. In the new cleated separator the cleats are $\frac{2}{12}$ of an inch thick; and if we take $\frac{2}{12}$ from $\frac{3}{16}$ of an inch it will leave just $\frac{1}{48}$ of an inch as the space between the face of the comb and the edges of the sections; or, to put it more simply, the sandpaper disk comes within $\frac{1}{48}$ of an inch of the face of the comb. Now, suppose the disk tears off a piece of propolis $\frac{1}{16}$ inch thick (I frequently find pieces $\frac{1}{8}$ thick), what will become of it? Why, it will be driven by the disk into the honey, or rolled over its surface and mar it. Or suppose it grinds the propolis to powder, it will then, with the powdered wood, stick to the disk, or else much of it be lodged against the face of the comb; and if the weather is warm it will be likely to stick there. The same difficulty would come from the use of a broad belt. If we must have the propolis I should much prefer to have it on the edges of the section to the face of the comb.

But perhaps my fears are imaginary. At most I claim them only as theoretical. It will, however, be noticed that a revolving cylinder will, by its motion, throw all propolis and dust, that do not stick to it, away from the comb, which is one point in its favor.

To have a cleaning-machine that would be entirely satisfactory we should like one that we could pile the sections into by the clampful, like golden sheaves of grain into a thrashing-machine, and have our sections come out at the other end all free from propolis, and polished to a turn; yes, and graded into three piles—Fancy, No. 1, and Seconds. But this is not likely to be.

But what are we to save in time by a section-cleaner, any way? How many sections will or should a good machine clean an hour, or day of ten hours? Another question comes in right here: How many sections, as they run, will a man or woman clean in a day? Mr. Aspinwall says in *Review* that he could clean twice as fast with his machine as by hand. How fast does he clean by hand? I found last season I could average just about 1000 in ten hours, and clean my clamps; and yet my right-hand man, who had no previous experience, could not clean more than 500, although much stronger than I am, and a very active man, and he called it the hardest work of the season. An aching shoulder for some weeks after I got through cleaning led me to think I had worked harder than was wise.

If a cleaning-machine will not clean any faster, it seems as though one might do it much easier and better, which would be a great gain.

I have certainly been much interested in this subject, and have given it considerable thought, and carefully studied every thing I could find on this subject. The greatest difficulty seems to be that any thing now proposed that will do the work well will gum up or will not reach all the propolis. If a solid cylinder of emery, such as Mr. Aspinwall illustrated in the *Review* (it looks like solid emery), will not clog up too quickly with propolis, or if it can be cleaned quickly, it would, if of the right shape, do the work, it seems to me, very effectively. I send you illustration of such a roll or cylinder of such shape as to clean the edges of old-style sections.

That we might have something that would scrape off the gum, and not clog, I have thought of a cylindrical spring wire brush. The motion of the wires would likely clean them ; or if not, then turn them in an opposite direction against a piece of board, and the propolis would get off, I think.

Another way to remove the propolis would be to use a cylinder with knives set so as to wind around it like the threads of a screw, except at the ends, where they should be at right angles with the length of the cylinder. Such a scraper (for, indeed, it would scrape just as we scrape with a knife) would not be likely to clog ; or, if it did, it could be easily cleaned with the point of a knife while revolving very slowly.

Another form of the same method would be with knives set diagonally to the axis of the cylinder, with thin blocks between, and all bolted firmly together. I am not sure but nearly all of this last form could be made of wood, except the knives and bolts. It would have the advantage of the knife passing over a given space twice in every revolution. Whether such cylinders can be furnished at a price that could be afforded by bee-keepers, I am not able to say at this time.

It seems to me now that we are not likely to get any one thing that will do our work best ; but with one to take off the bulk of propolis, and another a disk or emery cylinder or sandpaper belt to polish and finish up, it looks hopeful. Some sections will need but one, while others will need a good vigorous application of both.

I am making this paper quite too long ; but I just want to say that, if you or your expert mechanics at Rootville, or your correspondents, will criticise my ideas as freely as I have those before me, and propose something better, no one will be more pleased than myself. The season is opening, and there should be a thoroughly practical machine on the market by July 15th, if possible.

Middlebury, Vt., Mar. 10.

Later.—I have delayed sending the above, that I might have an opportunity to test some of my theories ; so I made a roll after the last one described, but using sheet-iron plates instead of steel, and attached to a Barnes-saw belt, when, presto ! it cleaned off the propolis, but not as fast as I liked, and then I filed teeth in the edges of my iron plates, when it took hold, tearing off the propolis, and wood too, if I was not careful. Well, it did the work, but very roughly ; but it was a rough tool. It proved very conclusively, however, that making machinery was not my forte.

From my experiment I am of the opinion that such a roll well made would do most excellent work ; but it needs a roll that will not bend and twist out of shape as mine did. There appeared to be no trouble with clogging.

Apr. 5. J. E. C.

[I have nothing special to criticise except in one point ; namely, where friend Crane says that he finds "the space in old-style sections between the comb when filled and capped, and the separator, is just $\frac{3}{16}$ inch." I feel quite sure he has made an error here. I have measured the distance in something like a hundred different section boxes. Some of the sections were produced in Colorado, some in California, some in New York, some in Ohio (our own), and some nobody knows where (I didn't find any from Vermont). I picked the sections up at random, and measured them. Where *separators* were used I did not find a single one where the space between them and the cappings was only $\frac{3}{16}$ of an inch. The great majority had just an even ¼ inch. I found some that had a space even of $\frac{5}{16}$, and a very few that ran about $\frac{1}{64}$ under the ¼-inch space.

A few weeks ago, R. C. Aikin, of Colorado, sent us a few of his supers (to illustrate another experiment) just as they came from the hive. These are in our office now, and supers are literally crammed full of honey, so that faces of the combs above the separator in the many instances are bulged out ; but in no instance did I find a section in this lot where the capping of the comb was less than ¼ inch from the separator. As it was evident that the bees were greatly crowded, that would probably reduce the bee-space to a minimum.

In an article elsewhere in this issue Dr. Miller says a comb in a 1⅞ wide section will average 1⅜ inches thick. This allows the ¼ inch between the face of the comb and the separator just as I find it to be from my own measurement.

Now, then, I deduce from all this that the average bee-space between the separator and the capping of the comb is ¼ inch ; and if we take off $\frac{2}{12}$ we shall have $\frac{1}{12}$-inch space left, or $\frac{2}{12}$ between the faces of two combs in plain sections when they are put into the shipping-case, providing separator stuff is not slipped between.

His points are all well taken in regard to sandpapering - devices for cleaning sections. Partly from my own limited experience and partly from reports, I have come to the conclusion that it is almost absolutely necessary to have high speed. The revolving disk should travel, *perhaps*, as fast as a buzz-saw, which is about 3500 ; and the mandrel used by L. A. Aspinwall, made of emery, probably travels not much less than 3000. I feel sure, as Mr. Crane does, that something will be evolved somewhere or somehow between a set of scraping-knives and sandpaper. He, so far as I know, was the first to suggest scraping-knives on the plan he describes ; and if the idea is worthy of a patent he ought by right to have the first chance at it.—ED.]

DRAWN-OUT COMBS.

Does Honey Ripen in Thin Combs Quicker than in Thicker Ones? B. Taylor's Method of Comb-leveling ; a General Discussion sion of the Whole Question.

BY DR. C. C. MILLER.

One who has paid any attention to the matter must know that there is great difference of opinion as to using sections containing comb drawn out more or less the previous season. Some say it's a gain of dollars to use them; some say it's a loss. Some say they must be leveled down if the cells exceed ¼ inch in depth; others say, the deeper the better. As dollars and cents are involved, I'd like to know where the truth lies. I confess that I don't know whether I know for certain. I believe there is a financial gain in having cells drawn out, whether done by the bees or machinery, and that the deeper the better so long as they are perfectly clean and not deeper than we want the finished product. And yet it is possible that there may be something I haven't watched close enough — something I don't understand clearly enough; and if I'm wrong I want to be righted; for I don't believe that I'm so stubborn in opinion as not to change if holding on to an opinion is going to lose money for me. If I'm right, then those who disagree are losing money, and should be glad to change. So let me say how the matter looks to me; and if there's any thing wrong in my views, please show it to me.

I start on the assumption that extracted honey may be as good in quality as that contained in the cells of the best section honey; and yet there's a possibility I'm wrong in that. For years I have used many sections that had been drawn out previously, and have always supposed I got nice finished sections from them. But others say they have done the same thing, and the product was bad. In the *American Bee Journal* for Nov. 18, 1897, the question was asked as to the quality of the honey in such sections, and opinions varied. A number had had no experience "along that line;" a number had tried them and had found no objection. R. L. Taylor thought they were not capped so well nor so quickly; not so fine in appearance as to color, and perhaps inclined to granulate and ferment. E. T. Abbott always secured a poorer quality of honey. J. A. Green found a liability to granulation and fermentation, along with other objections. W. McEvoy found leveled-down combs always filled and finished sooner; but he doesn't like the flavor quite so well.

The question comes, Have these four men been more observing than the larger number who had found no objection? or was there a difference in circumstances to account for a difference in results? Mr. Taylor mentions an objection that has also been given by others: The bees are slower to fill and cap unfinished sections. However this may be with Mr. Taylor, one of the things I know, and know to a dead certainty, is that such is not universally the case. I have had a somewhat extensive experience in years of failure, and have had hundreds of cases in which the one unfinished section in the super was filled and sealed, and the remaining sections with foundation were left untouched. Again, in years of plenty I have always found the bait section filled and sealed first.

I don't know, but I suspect that this difference of experience comes from different conditions. Take an unfinished section this fall from a hive, extract it, and don't let the bees touch it till next spring, or leave it without extracting till spring, and I think such a section will have granules left in it that will make the bees a little slow about using it, and will affect the quality of the honey stored in it. Let that same section be given to the bees to clean up before there's any possible chance for granulation, letting it be where the bees think they are *robbing* it, so that they will clean out the least and last remains of the honey, and I think you will find, as I have done, that it will be filled and finished sooner than a section with foundation.

But among those who favor using drawn comb, or drawn foundation either, there is a marked difference of opinion as to the proper depth to which the cells should be drawn out. B. Taylor has been quoted as using his excellent "Handy" leveler for the sake of reducing the depth of the cells. I don't believe he ever used it for that purpose on a perfectly clean section, and have asked for proof. No one has ever brought forward the proof. On the page already quoted in *American Bee Journal*, the question is also asked how thick the comb should "be after being leveled down *a la* the late B. Taylor." The answers vary from ½ inch to full thickness.

In *American Bee Journal* for Jan. 27, 1898, several of the repliers go into details somewhat, giving a reason for their belief. It may be interesting to refer to these, keeping in mind that the thickness of a sealed comb in a 1⅞ section with separators will be about 1⅜. And I may say right here that this matter is of sufficient importance to give it a good deal of attention; for if we who are using deep cells are losing by it we ought to find it out; and if others are wasting by cutting down unnecessarily, then they ought to stop the waste. Besides, if drawn foundation is to be used it is important to know what is the best depth, providing it makes no difference to the machinery.

One reason given for having cells not more than ¼ inch deep is that, when deeper, the comb is tough. If there is any difference, ought not the part of the comb last made be the most tender? Then why cut away that, leaving the toughest part? Another is that, with cells more than ¼ inch deep, the honey is not as thick and of as nice quality. If that be true, it is reasonable to gauge the thickness and quality of the honey by the depth of the cell. A cell ½ inch deep will not give as nice honey as one ⅜ deep; a cell ⅜ deep will be excelled by one ¼ deep; this in its turn is not so good as one ⅛ deep. I don't say it isn't possible there may be something in the matter of depth; but if it is true that a cell ⅜ or ¼ deep is better than a deeper one just because of its depth, I don't for the life of me see how it is possible to get away from the logical conclusion that, the greater the depth, the poorer the honey; and, the less the depth the better the honey, the best honey of all being that produced on the Michigan no-wall foundation.

The same reason also applies to another objection, that honey sours in cells more than ¼ deep. If it sours at ⅜ deep, there certainly must be a little tendency that way if cells are only ¼.

Another item is, that combs are rough and unsightly, so the cells must be cut down to ¼ in depth. Now, suppose a cell is ⅝ deep. I cut away ¼ inch, leaving it ⅜ deep, and you say, "Oh! you must cut away another ⅛ and make them build that ⅛ over again or else they'll finish it rough." That may be reasonable, but it doesn't look so at the present writing.

I have often wondered how it is that combs of full depth could be used for extracted honey, while the honey would sour, and all sorts of things, if it were left in the comb. Mr. Demaree refers to the matter, and says conditions are different. "The bees instinctively spread out the honey in the extracting-combs, and thereby aid in the evaporation of the excess of water in the nectar; while in the section-cases the work is more concentrated, and the drawn-out combs are sometimes filled and sealed before the nectar is thoroughly seasoned." Surely the bees don't know whether the drawn-out combs are intended for comb honey or the extractor; and the only difference would be the greater amount of room in one case than the other. But is it the rule that honey in extracting-combs is more liable to spoil if the room be limited? and just as much room can be given in section-supers as in extracting-supers.

I am inclined to believe that Messrs. Larrabee and Doolittle have more nearly the correct view. Mr. Larrabee wants just enough cut away so the bees will finish out with white wax and cover up combs that are stained, although there might be some question how much stain could be allowed, even if covered up. Mr. Doolittle says, "There is only one reason for a comb-leveler, and that is to get rid of the thick edges to the cells (which generally are of a dingy-colored wax), so that the bees will lengthen out the cells with new wax the next year, thus completing the combs so that they will look equal to those built out entirely new from the foundation. . . . . As I use sections whose combs are only 1⅜ thick, it is necessary to level them down to about one inch to accomplish what I wish. If I used two-inch sections then I would leave the combs, after leveling, about 1½ inches." Barring a slight inconsistency in his figures, I believe Doolittle's head is, as usual, level; and if there's any leak in his logic or mine, I'd be glad to have it pointed out.

Marengo, Ill., Feb. 11.

[I have spent a little time in looking up the late B. Taylor's articles, but I do not anywhere find that he gave a distinct reason *why* he leveled his combs. He seems to have left it to his readers to infer that it was for the purpose of getting rid of the thickened and soiled edges of combs as bees leave them before the capping is put over; and, incidentally, I believe he made the point that honey would ripen better in shallow cells than in the deeper ones.

When this question came up a few years ago a good many reported that it was not profitable to use unfinished sections, because the honey was more apt to candy; and that, even after they were completed, they did not look as nice and clean as those built from foundation; but at the same time the idea of leveling down the combs, *a la* Taylor, was not, of course, taken into consideration; but since that time there seems to have been a general testimony to the effect that such leveled combs are not only readily accepted and filled by the bees, hence finished sooner, but in appearance are fully equal to those built from foundation.

When the use of unfinished sections was condemned in the first place, it is possibly and probably true that they were not first extracted; or, if extracted, they had not been given to the bees to clean out.

Later on, Mr. Taylor brought forward the statement that he considered unfinished sections his most valuable stock in trade for the following year. He extracted them, and then left them exposed where the bees could clean the honey out. They were then leveled down, put into supers, ready for next year's business. If I remember correctly, he claimed that such a procedure increased his honey crop by almost a half.—ED.]

* * *

THAT LONG-IDEA HIVE AS POPPLETON USES IT.

The Advantages of Single-story Hives Over the "Doubled-eckers."

Mr. O. O. Poppleton:—Having Mr. Doolittle's "History of the Long-idea Hive," GLEANINGS, page 634, and your reply, page 13, I have become somewhat interested to know more of the particulars regarding said hive. What size is your hive, inside measure? What size is your frame? Where do you form the entrance, at side or end? Do you use a loose hive bottom? What are the most important advantages over the top super hive? Is it necessary, in this hive, to use excluders between the brood-chamber proper, and the surplus compartments? D. W. HEISE.

Bethesda, Ont.

[Mr. Poppleton replies to the above as follows:—ED.]

The hive I use is 36 in. long, 13¼ wide, 13 deep, inside measures. Frames are—top-bars, 14 in.; side or end-bars, 12 in.; comb-guide, 12½ in., and bottom-bar 13⅛, the last projecting about ¼ in. outside of side-bars. (See article on p. 517, GLEANINGS for July, 1897.) Entrance is in the middle of the long side of the hive. I use a tight bottom. This is more necessary with me than with many, on account of my practicing migratory bee-keeping. The principal advantage to me is that, with my physique and temperament, I can do better work with single-story hives than I can with double-decked ones. Our Creator has made us differ from each other in qualities of both body and mind, and our success very often depends somewhat on our adoption of such methods and implements as are best suited to us. There are advantages and disadvantages in both kinds of hives. With the single-story hives I can always keep just the right number of combs in the hive, according to strength of colony, without having to add or take away a full story at a time. This I used to find quite an important advantage in Northern Iowa, in the spring. I can get into the brood-nest for any manipulation easier and quicker; I simply have to remove cover, insert knife between any combs in the hive I wish to examine, push a little sidewise, and the frame I wish is ready to be handled; and in closing up, a single push shoves all the frames back into place. I use self-spacing frames. I never have to take out comb covered with bees, and set outside of hive to give room for work. I never have any upper story to lift on and off. This, to a person of my health and strength, is a very important advantage. I can keep a closer supervision over the condition of my bees, as, every time I do any manipulating, I am much more apt to notice if any thing is wrong, or beginning to get wrong, than if I go into only an upper story.

I do not use queen-excluding zinc. If one's locality requires the use of zinc, a sheet can be fitted in on each side of the brood-nest, but not so easily or cheaply as in double hives. In this section I don't wan't to use zinc in any hive. In Iowa the use of first-class Italian bees suited me better than zinc, as their disposition was to breed largely early in the season during a light flow of honey, but to drop raising brood largely, and fill every thing full of honey during a heavy flow. If the honey-flows are the same in Canada as they were in Iowa, short and heavy, then success with the single-story hive requires the use of the best stock of Italian bees.

I have answered Mr. Heise's questions briefly; but if he or any one else should decide on testing the use of these hives, I would suggest that he will find the subject gone into much more fully in an article, or, rather, articles, published in GLEANINGS some 12 or 15 years ago, under the head of "How to Use Single-story Hives." O. O. POPPLETON.

Stuart, Fla.

* * *

HOT-WATER VS. COLD-WATER TREATMENT OF BEE-STINGS.

Cold-water Packs Dangerous, and Why.

BY CHALON FOWLS.

On page 68, *American Bee Journal*, Dr. Gallup advises us to treat bad cases of bee-stings with a cold wet-sheet pack, and also same treatment for horses. As I do not write for that journal, I wrote nothing in remonstrance, and I fully expected the subject would be discussed by some of the able writers in that journal. But it has not been; and as the efficacy of this treatment has not been disputed, I suppose it's no wonder that Rambler hails with delight any remedy that dispenses with whisky, which, by the way, I hate quite as cordially as he does; and you too, Mr. Editor, throw up your hat in a way that would imply that you indorse that treatment. Hold on! have you ever seen it tried in a very bad case? I notice in your A B C of Bee Culture one of the authors (presumably A. I. R.) says that plunging the hand in cold water made it ache worse; but he thought it was because he allowed his mind to dwell upon it. No, it was the cold application, and nothing else.

Before any one uses this treatment for a dangerous case I would suggest that it be tried on less dangerous cases, and see if it allays the pain any more than its natural subsidence. For my part, if it were a dangerous case in my family I would defend them — yes, risk my life, if necessary — from such treatment, for I verily believe that such treatment might cause death to the person so treated.

Well, if a cold-water pack is condemned, you will ask, "What shall we do?" Why, just heat the water. It ought not to be very hard to convince either of the Roots that, while *cold* water might be injurious, *hot* water might cause most beneficent results. In order to render a reason for the faith that is in me I will give some experiences that I have had the past season that brought me to my present way of thinking.

One day last spring I went and opened a queenless swarm of hybrids, without smoke or veil. On the instant one of the vicious insects made a "bee-line" for my eye, and stung the naked eyeball quicker than a wink. To say the pain was intense is but putting it mildly. In fact, it was the worst case that I had had in twenty years. Luckily it was at the home apiary. As I had used cloths wrung out of hot water for neuralgic pains in the same organ, I thought of that at once. I could not see out of either eye, but managed to grope my way to the house, at the same time calling for help. As soon as the hot water could be gotten for me I applied the cloths, with the result that it very much alleviated the pain, and just in proportion to the heat of the cloths too.

Later in the season I had occasion to use the same remedy again. Early one morning, hearing a racket I jumped up and ran out barefooted and bareheaded, and found my horse had got a gate open and had got out through the fence, and was caught by her tether rope in some bushes where two late swarms of bees had been hived. She had entirely demolished one hive, reducing it to kindling wood, and had just kicked over the other one when I heard the racket. Of course, the air was filled with infuriated bees, and the mare was performing the circus act. I tried to get up and cut the rope, but could not get near enough to the frantic beast without great danger of being struck down. I then beat a retreat to the house, meanwhile smashing off handfuls of bees that were stinging my face, neck, and scalp, or anywhere they could get a chance; but no sooner had I reached the house than I reflected that I had left the faithful old mare to be stung to death, and I rushed back to the fray and succeeded in loosing her tether at the other end.

By this time I had an overdose of rheumatism medicine, or enough to prevent rheumatism the rest of my life. I hustled to get some hot water, and applied the hot cloths as before, with the result that, in twenty minutes or so, the paid was reduced so I could attend to the horse. I found her eyes swelled shut, and she was rearing and plunging, and throwing herself down in quick succession in a way that seemed as if she would pound herself to pieces soon if she did not die from the stings. Indeed, no one expected she would live; and one of the neighbors, who had once seen a horse stung so it died, said she would die in half an hour or so. I thought I could at least do something to alleviate the pain. One of my neighbors helped me, holding her down when she threw herself, and I applied boiling hot water as it was brought from the kitchen stove, just bathing the parts where stings were thickest, and sopping the rag on and off so as not to scald the flesh. Well, in two hours or so, with this treatment, all could see she was better; as she stopped throwing herself when we let her up, we quit using the hot water then. She could not eat or drink much for a day or two, as her lips were swollen away from her teeth. She was very stiff for a week, and had the farcy for a month, caused by the strain, I suppose. Where stings were thickest it broke and ran, thus getting the poison out of her system. It was over a month before I thought her well enough to use at all, and four months before she would lie down at night or had regained her flesh, and was apparently as well as ever.

Brother bee-keepers, give the hot-water cure a trial, and I have no fear of your verdict in comparison with cold water. I fear the use of cold water, in that it would retard circulation and so drive the pain into some vital part, while hot water would promote circulation, and tend to draw it to the surface.

Oberlin, O., April 9.

[I believe you are right, friend Fowls, and that the time will come when hot water as a remedial agent for aches and pains, as a drink (in copious draughts) for clearing out sour or disordered stomach, and as a substitute *a la* Dr. Hall for physic, will be better recognized than at present. Indeed, if I am correct, the schools of medicine now recommend *hot* water for sprains, bumps, and bruises, rather than cold applications. In the case of bad sprains the doctors usually advise water almost scalding hot, and the sooner applied the better. When my wife sprained her wrist some two or three months ago, we applied hot water at once. She could hardly endure the pain without the water; but with it, frequent renewing of the cloths made her wrist very comfortable.

Many another time have I applied hot-water cloths to her forehead when she had those hard neuralgic headaches. While they didn't cure, they alleviated greatly the throbbing pain. Several times when my boy has had sudden attacks of congestion of the lungs we applied rubber bags of hot water to the chest and back. The effects were almost magical.

With regard to stings, I do not know that I was ever stung badly enough to need special treatment; but my experience as above given would give me great faith in hot water. Hundreds and perhaps thousands of others who read these lines may see the time when the simple instructions given in this article may not only afford great relief, but actually save life. Hot water applied to a part stimulates and assists circulation; but *cold* water causes contraction, congestion in the part, and a retarded circulation.—Ed.]

PLAIN SECTIONS VS. OLD STYLE UNDER THE SAME CONDITIONS.

BY S. T. PETTIT.

Dear Editor: — Evidently, touching the matter of plain sections, fences, and dividers, we don't quite understand each other. But, first, I will say I regret the terms I used in the *Canadian Bee Journal*, and beg pardon. But still I can not think, all things being equal, that a plain section will be filled any better than a bee-way section. *This is what I mean: give the bees "free communication in every direction," with both kinds, and the one will be filled just as well as the other.* I can see no reason why it will not. It is the passageway separator—"the free communication in every direction"—that does it, and not the section. In your footnote on page 257, you criticise the divider I sent you, and call it a fence, and seem to think it was intended to be used as a separator. Now, that is all a mistake. No, friend Ernest, I beg your pardon; but the ¼-inch vertical slats are not too thick. I have tested hundreds, and this season I intend testing a large number with vertical slats $\frac{5}{16}$ inch thick. But in other respects it was not a success; and, as I have told you, I am using those with ⅜-inch holes in preference. I admit it was poor workmanship, and certainly it was necessary to call attention to it; but it was made by hand to be used in experimenting, and that is my excuse. However, to-day I send you a separator made this winter, and I hope you will agree that the "workmanship" should pass. You will see that I have faith in free communication in passageway separators. You will observe that the holes are $\frac{5}{16}$ inch. But I believe your fence is all right for separators used with plain sections; but I can not hope that it will give good results when used as a divider. Nothing less than ¼-inch vertical slats should be used outside the divider for best results. There must be room for a nice company of bees in shape to be comfortable and contented.

Belmont, Ont., Can.

[Why, friend P., we agree to a dot; and especially do I agree with that sentence of yours that I took the liberty of putting in italics. Any one who would try to take a contrary view would be, to say the least, hardly in his right mind.

When I referred to poor workmanship I did not have in mind your divider, perforated with holes—I meant only the one having horizontal slats nailed on cross-cleats, which, to a certain extent, is the principle of our fence, but lacking in the essential features that I named.

No, friend Pettit, I do not think less of a man, especially one of about your size, if he should differ with me regarding the value of the plain fence and section when used together. When one is fair in the statement of his differences, and does not accuse me of questionable scheming or of dishonesty, I respect him the more because of his honest and frank statement.—Ed.]

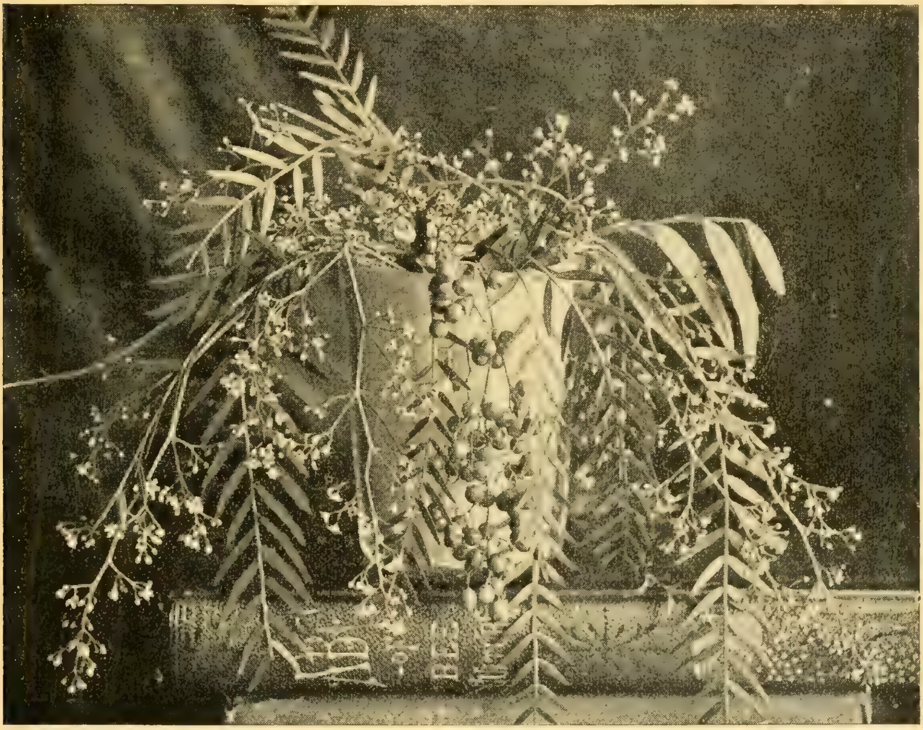
THE EUCALYPTUS (OR PEPPER) TREE.

BY J. H. MARTIN.

The pepper-tree (*Schinus molli*) is a native of Peru. It is termed a small tree by some authorities, but in California it finds a congenial soil and climate for development into a robust tree nearly as large and spreading as the live oak. It is an evergreen, and its long drooping branches bear an abundance of delicate pinnate leaves. The blossoms are small, white, and arranged in terminal clusters. The tree derives its popular name from the resemblance of the seed or berry of the common pepper-berry. The seed and the foliage have a distinctive peppery flavor. The color of the berry is a bright red. The tree bears an abundance of them, and the long clusters intermingled with the green feathery leaves make a pleasant contrast.

The tree is planted largely for shade, and is an object of beauty except in one particular. It is said the peacock, when strutting in all the magnificence of a spread of tail feathers, drops them suddenly when it looks down upon its homely feet; so the pepper-tree might bow its beautiful head in shame upon getting a glimpse of its rough and misshapen trunk.

When the pepper is in full bloom the bees work incessantly over the tiny blossoms. They gather pollen and some honey; but as to the amount, there is a difference of opinion among bee-keepers. Sometimes, when the skin of the berry cracks, they work upon that with about as much vigor as they do upon the blossom. The nectar they get from either the blossom or the berry partakes of the nature of the tree, and is peppery or strong in flavor, and dark in quality. We have heard of no great yields from this source; but as it is in bloom at a time when other plants are secreting nectar, and of a better quality, the pepper comes in for some condemnation for giving a pungent flavor and dark hue to what would otherwise be first-grade honey. On this account some bee-keepers are opposed to planting it. It is distinctively a shade tree, for the berry and the timber are of but little use.



BLOSSOMS FROM THE EUCALYPTUS (OR PEPPER) TREE.

The berry has some medicinal virtues about it, and preparations from it are recommended for the cure of coughs, colds, and lung troubles. Mr. Levering, of this city, has a method for getting the full medicinal value from the berry, and incorporating it in honey. It is quite probable, however, that, if the honey could be obtained as distinctively pepper as we get the sage, it could be sold upon its medicinal qualities alone.

Honey from the eucalyptus-tree has found ready sale upon its medicinal qualities. The same may be said of horehound and other distinctively flavored plants. The time may come when, by proper grading, we can secure these various virtues in the honey, and sell it upon the merit of food or medicine. I am, therefore, inclined to speak a good word for the pepper-tree, and advocate the planting of it, for a noble and beautiful tree is a thing of joy every time we look at it.

Los Angeles, Cal.

[If I am correct, the eucalyptus was first introduced into California, where firewood is so high-priced and scarce, with the view of using it for fuel. It is of tremendously rapid growth, and I saw little patches that might be called a dense forest that was all grown in about six years. In fact, trees were pointed out to me, 70 feet high, that grew in seven years, or ten feet every year on the average. The tree has been introduced to some extent in Bermuda, and also in Florida; but nowhere else does it make the astonishing growth that it does in California. Our artist has succeeded in giving a most lifelike picture of its graceful foliage, blossoms, and berries; and somebody, I do not know who, has been so careless as to set that vase on top of a brand-new A B C book. Never mind; if the water does not get slopped over, it probably will do no harm.—A. I. R.]

THE ONTARIO COUNTY CONVENTION.

Apis Dorsata; Glimpses of the History of the Honey-bee and Bee-keeping, etc.

BY FR. GREINER.

When Mr. F. Benton gave his account of his exploits in foreign lands when in pursuit of different races of bees, the supervisor's rooms of the Canandaigua court-house were crowded, and, though he spoke quite at length, he held his audience spellbound from beginning to end. The professor seemed to be at home in every thing pertaining to bee-keeping in Germany, Austria, Italy, Syria — in fact, I don't know where not. He seemed to be acquainted with all the leading lights in those lands. In Carniola he had remained four years and had bred the Carniolan bee.

YELLOW CARNIOLANS AND THEIR ORIGIN.

I remember we had quite an animated controversy some years ago in regard to what the Carniolan bee should look like. Mr. H. Alley asserted that it was originally a yellow bee, and he advertised his golden Carniolans at the time very largely. Breeders from Carniola assured me then that, in a Carniolan swarm, perhaps one in fifty bees might show a trace of yellow on first band.

Mr. Benton has traveled all over Carniola, and his explanation of the yellow admixture appears quite reasonable. He says, from south of Carniola, where yellow (Italian) bees predominate, the peasants have for ages past been in the habit of moving their bees northward at certain seasons of the year into the richer pasture-fields of Carniola. From the north part of the province the peasants there have come southward with their gray bees, and so the yellow bees have come in contact with the grays. Very often the peasants would sell out, and, neither buyers nor sellers being very particular as to the color of the bees, they became more and more mixed. As a natural consequence, the further south one goes in Carniola the more of the yellow blood the bees show. In North Carniola the bees are a pure gray.

Mr. Benton selected for his breeding-stock among the bees offered for sale by the peasants such as were most typical, and at the close of the four years he remained in Carniola he had what he claimed, the finest lot of Carniolan bees anywhere. Now, although Mr. B. tested all sorts of bees after that, it is surely a feather in the cap of the Carniolan bees that his present stock consists entirely of such. I want to mention further that it is possible to breed out their swarming propensity. Mr. B. has succeeded in this to such an extent that he can notice but little difference between his Carniolans and other races in this respect; and as to their business qualifications, he thinks they are second to none.

Speaking of the best business bee reminds me of what Mr. Weygandt, of Flacht, Germany, says on this point: "Have we not made a mistake in importing a southern race of bees, a bee naturally not so well adapted to our climate? It seems to me it is going a step in the wrong direction. Should we not rather go to the North, where bees have to endure greater hardships, where conditions are less favorable? The bees in Norway, for instance, must of necessity be a hardier race. By them we may infuse stronger blood into our own race of bees."

I want to ask, is this not a point worth considering? I should like to see such a bee from a northern clime imported. I should like to try them.

CYPRIAN AND SYRIAN BEES.

To return to my subject: After having been engaged in the queen business for four years in Carniola Mr. Benton started for Cyprus. He found the bees there very uniform, as one might expect on a small island. They were very yellow, and slightly smaller. The high winds nearly always prevailing had caused the bees to develop there great strength of muscle, fitting them well for long flights; and, further, there are a great many hornets in Cyprus, which often attack the bees — yes, sometimes exterminating whole apiaries. In order that they may be better able to defend themselves, the bees have gotten into a habit of clustering around the entrance of their hives, and pouncing upon attacking wasps as soon as any come near. By such constant irritation by the wasps, the bees in time had become very cross, and so, indeed, they were found. Still, Mr. B. handled them as easily as blacks, and even preferred them. He says he occasionally opened a hive without smoke, and was led to believe that a more prolonged test of the Cyprians in America would have resulted in a gentle bee.

Mr. Benton also visited Syria. The Syrian bee resembles more nearly the Cyprian than does the Palestine; but neither one is as manageable as even the Cyprian. The Palestine bee nearer approaches the Egyptian, which latter is also a very irritable bee, exceedingly inclined to produce fertile workers.

BEES IN GREECE.

In Greece also Mr. B. found quite a vicious bee, large and dark, possibly a mixture of Eastern and Western bees. A sort of round basket, fitted out with top-bars, was used as a hive. It may have been in use for a thousand years. People there have a way of keeping their strained honey in goat-skins — hair side in, of course.

TYPICAL ITALIANS, WHERE FOUND.

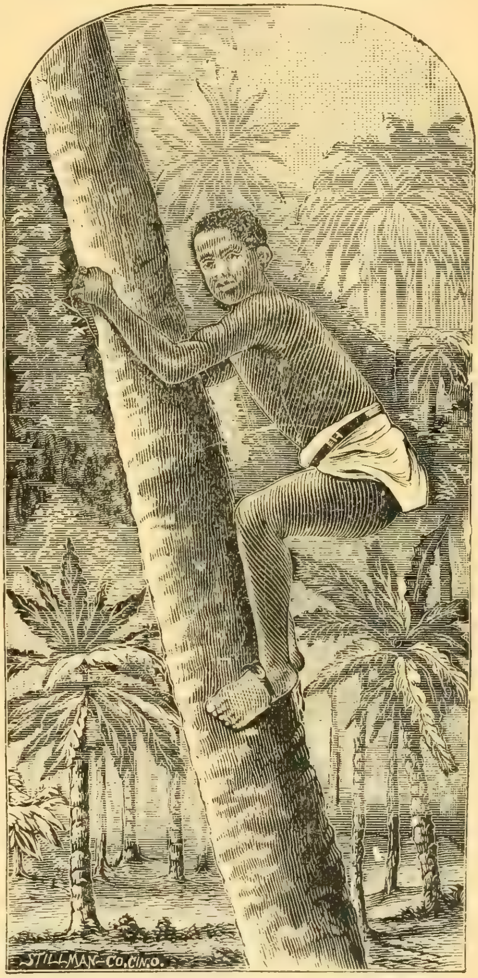
The most typical Italian bee Mr. B. found near Bologna, and northwest, in Parma, Burgamo,* and Modena, Sardinia had a fairly good Italian bee.

Along the north coast of Africa he found the black Tunisian bee in Tunis, Tripolis, Algeria, and Morocco. It is the very worst bee for comb honey, on account of the great amount of propolis they daub on every thing, and because of the watery appearance of the cappings. At one time they were sent out from England as the Punics, as most of us remember. North Africa is a regular bee-paradise. The rosemary honey gathered there is the finest honey in the world, according to Mr. B. The natives practice migratory bee-keeping, moving their bees on camels. The hive in use is a long cylinder of clay, closed with a clay disk on each side. The honey is removed from the rear at the close of the season. Bees are never killed for their stores, but enough honey is always left them for their subsistence.

APIS DORSATA; HOW THE NATIVES GET THEM.

Mr. Benton described Ceylon as a perfect fairy land. After his return from Java he found the *Apis dorsata* there. There were numerous nests of these bees on one tree — I think 12 or 14 of them. The natives who escorted him constructed a ladder for him in a short time out of long poles, sticks, and some sort of twine. By means of this he was soon in the top of the immense tree where the nests of the dorsata were located on the under side of limbs. The bees paid little attention to him until he touched them with his heavily gloved hands. They then arose in great numbers, and tried to sting every thing around, so Mr. B. made his retreat. Afterward he approached them again, and coaxed them up with sweetened water, sprinkling them with it, when he could handle them without difficulty, although he was not able to find the queen. The comb this colony had was 4½ feet in length. The natives undertook the job of obtaining the bees for Mr. B. afterward. It is rather amusing, but they scorn the idea of using a ladder. They have a way of climbing the largest trees in a sort of monkey fashion. It was comical enough the way Mr. B. explained just how they did this. It is shown on p. 8 of GLEANINGS for 1882, and reproduced here.

It must be understood that the natives are clothed only with girdle cloths, and it would seem to us rather risky to try to do any thing with such bees under such conditions; but they seem to understand just how to do it. After one of the natives had reached the top of the tree (or, rather, a limb), not far below one of the nests, he lighted a torch, which he had brought with him, and made a smudge with it directly under the bees. Thus frightened they arose, leaving all their comb exposed, and now was the time for the native to do his work. A long cord was thrown over the limb just where the comb was built below it. A light basket, which he also had carried with him, was fastened to this, and was held in proper position, so it would be just under the comb. Now with a long knife, which he drew from his girdle, he slashed into the comb, cutting it loose, and causing it to drop into the basket. When all was gathered in, the basket was lowered by the cord. The assistants waiting below took it and made haste to reach a spot of safety. The native up in the tree was also not slow to slide down


STILLMAN-CO.CIN.O.

NATIVE CLIMBING A TREE FOR APIS DORSATA.

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* I am not sure of the spelling of the name.

and seek shelter. It was indeed astonishing to see with what celerity he made his way down the tree. Of course, he had good reason to be in a hurry; for, after being thus robbed, the bees sailed around, assailing every thing in the vicinity. However, they could not be induced to collect and cluster; and as to getting possession of them, the undertaking was a failure. The natives did not quite comprehend what Mr. B.'s object was; and in securing the comb and honey, and especially the brood, which is a greatly esteemed delicacy with them, they evidently thought they had done the job to Mr. B.'s entire satisfaction.

MR. BENTON ATTEMPTS TO GET APIS DORSATA.

Another attempt was made to secure a colony of *Apis dorsata* later when a number of nests were found on a steep hillside under high projecting rocks. The natives again constructed a long ladder out of poles, sticks, and ratan ropes, by means of which they reached the bees. They succeeded in constructing a platform just below the bees, from which they expected to do the work of transferring, and, after night had come, Mr. Benton proceeded with it. He had calculated that the bees, when taken in the night, would not leave their comb, and in this he was right. He succeeded admirably in securing two colonies of dorsata—the first that ever were transferred into hives. The frames used were made of 1½-inch strips; the hives were one foot deep and 3½ feet long, and five frames were used in it.

Another colony was discovered higher up on the hillside, in a cavity. There were three combs alongside, while the other nests had but one comb. This colony was also transferred by Mr. B., and secured in good shape. The natives always received the odds and ends of brood that would naturally accumulate in transferring combs into frames, and which were sweet morsels to them.

Unfortunately a very heavy storm broke loose at this time, and before any shelter could be reached all were drenched to the skin (insignificant as far as the natives were concerned). The exposures were such as to effect Mr. B. seriously, for he was taken ill with a fever. In consequence of this he could not attend to the bees as he should have done. As soon as he could, and when he had only partly recovered, he started for Syria, on a French steamer, taking with him the three colonies of dorsata. They bore the confinement of twenty days very well, although one colony died on account of lack of stores. After the arrival in Syria the bees were allowed to fly; but the high winds affected them very badly; and as Mr. B. was compelled to stay two weeks longer on account of his health, finally the last of these bees died. Thus ended the undertaking of securing *Apis dorsata*, which had cost Mr. B. much time and money, and for which he risked his life and his health many a time.

It remains to be said, that, after transferring the dorsata, they did not readily patch up their combs, as we are used to seeing with our common bees; but they seemed to work and gather honey. The drones, as well as the workers of dorsata, are bred in the same combs, and the former are slightly smaller than the latter.

BEES IN HINDOOSTAN AND JAPAN.

In Hindoostan another race of bees was discovered by Mr. B.; also another gray bee in Japan. Both of these it might be interesting to test here. But the introduction of these bees, and especially *Apis dorsata*, is so problematical, and connected with so many difficulties in every way as to make it impracticable for one man to undertake it. That should be the work of the Agricultural Department.

That the most excellent address of Prof. Benton was well received by the large audience was very evident from the long-continued applause which followed, and the many questions asked him afterward during the discussion.

Another interesting feature of our convention was the reading of an essay by Mrs. S. J. Smith, entitled, "Anomalies analogous to Reason and Instinct," which captivated all who were present, which, however, I am unable to give, not having taken any notes.

The advisability of again asking for a spraying-law to prevent spraying of fruit-trees while in bloom was discussed. It was also decided to ask for a more practical anti-adulteration law.

Naples, N. Y., March 10.

To be continued.

[The facts given above are indeed very interesting. There can be no sort of doubt that Mr. Benton knows more about the different kinds of bees and their habits in their native climate than any other one man in the world.

As some of our later readers have never seen the illustration above alluded to, of a native of Ceylon climbing a tree in quest of *Apis dorsata*, I have concluded it might be interesting to have it reproduced. As originally printed, Mr. Benton regretted that it was made to represent a native of the island of Cyprus instead of Ceylon, hence we are the more glad to get it right now.—ED.]

* * *

ACETYLENE GAS.

BY M. F. BAKER.

We are much interested in Mr. C. H. Dibbern's article on acetylene gas, in GLEANINGS for Mar. 15; but from much experience and observation in that line we think some of his statements are not quite consistent with facts.

While insurance companies had formerly insisted on a generator being placed outside and some distance from buildings, now, after careful investigation, it is the general thing to allow generators to be placed anywhere in any building (see several regulations inclosed), without any extra charge, some openly claiming acetylene to be a means of decreasing their risks, as being safer than kerosene, city gas, or electricity. Insurance companies are not in the habit of increasing their risks without extra pay; hence this evidence of the safety of acetylene should be conclusive. According to the basis given by Mr. Dibbern, of an explosive mixture of 15 per cent of acetylene with air, the dangers he speaks of are doubtless much exaggerated; and as regards leakage, the danger is obviously less than with city gas, which is fully as explosive in that mixture as acetylene, yet accidents are very few considering the great amount used.

The strong odor of acetylene, and the small quantity used, about one-fifteenth of the quantity of city gas, are greatly in its favor. Its very pungent odor doubtless impressed Mr. Dibbern with a sense of danger, while in fact it is a great element of safety. The same leakage of water gas, for instance, would have been scarcely perceptible while just as dangerous. In fact, a person could scarcely breathe in a room having an explosive mixture of acetylene, on account of its strong and nauseating odor, while other gas would hardly be noticeable.

The probability is that any leakage of gas in Mr. Dibbern's experience was a long way from causing an explosive mixture. The offensive odor of acetylene would likely impress a person with the strong sense of danger with one foot of acetylene in, say, three thousand feet of air; and it is unlikely that Mr. Dibbern had a greater mixture, instead of one to seven, as might be inferred. His reference to fifteen per cent of gas escaping into a cellar is extremely improbable. In the first place, long before one foot of acetylene would escape into three thousand feet of air in an ordinary cellar, the odor would be very noticeable, and even offensive, in every part of the house, unless the cellar was well ventilated, which would, of course, obviate any danger.

In case of fire no gas could escape unless the gas-pipes were melted or broken, at which stage of a fire a little more or less heat would be of little consequence one way or the other. Mr. Dibbern entirely overlooks the fact that acetylene unmixed with considerable air (as is always the case in a gasometer) is absolutely non-explosive, and would simply burn like grease, instead of exploding like gunpowder.

Mr. Dibbern's conclusion that acetylene is explosive because it will ignite from a live coal is quite erroneous, not to say unscientific. It simply shows that acetylene burns at a lower heat than other gas or kerosene, which is much in its favor, as it gives a cooler and more comfortable light in summer time, and there is much less danger of any thing taking fire from being close to a gas-jet, and which has frequently caused disastrous fires. This is particularly significant when we consider that an acetylene flame from the same amount of gas has but two-thirds the heat of a flame of city gas, and that only about one-fifteenth of the quantity is used for the same amount of light.

There are still objectionable features that have not been fully overcome in hand-lamps for acetylene. However, there are now small generators on the market that are inexpensive, and are giving good satisfaction, that will likely take the place of the hand-lamp.

Buffalo, N. Y.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

SOMETHING FOR BEGINNERS.

Question.—I am a beginner in bee-keeping, and have been persuaded to take GLEANINGS. I see that you have a query department in said paper, and I wish you would tell us through that department what you consider the prime thing a beginner should know first. What is the main thing in bee-keeping necessary to know?

Answer.—There are very many things in bee-keeping which are considered of first importance; and the beginner should understand all of these, if he or she would be successful; hence no one should enter the ranks of bee-keepers without first reading some one of the many good works on bee-keeping, such as Root's A B C book; Langstroth on the Honey-bee, by Dadant; Cook's Manual of the Apiary; Quinby's Practical Bee-keeping, by L. C. Root; Bees and Honey, by Newman, etc. There are more good books on this subject than I have time to mention here. Having procured one of these books, carefully read it two or three times till the whole is familiar to you from beginning to end, when you will be ready to subscribe for and read intelligently one or more of the several good bee-papers there are published in the United States.

Having got so far I will tell you one of the many other things you will need to know, for on this hangs very much of that which will bring prosperity. In nearly all localities where bees can be kept there are certain plants and trees which give a yield of surplus honey at a certain time of year, while, aside from this, there is little more honey obtained by the bees than is needed to supply their daily wants. Some localities give a surplus at three stated periods, others at two, while the majority give only one such yield. Hence it must be apparent to all that, if such a honey-yield (or yields) passes by without any surplus, none can be obtained during the season. From this it will be seen that, in order to be a successful apiarist, a person must have a knowledge of his locality, and also know how to secure the laborers (bees) in the right time, so they can be on hand when the honey-harvest is at its best. Failing to do this there is little or no profit in apiculture, and my main reason for writing on this subject is that those who read may obtain the best results from their bees.

Practically first, then, we have the location. Here in Central New York our honey crop comes mainly from linden or basswood, which blooms from July 2d to 15th, and lasts from ten days to three weeks, according to the weather. In other localities in this State white clover is the main crop, coming in bloom June 10th to 16th; and, again, in others, buckwheat, yielding honey in August; but as the larger part of those living in the Northern

States have a yield of honey from basswood I will speak of that as the harvest in illustrating what I wish to. Bear in mind, however, that it devolves on the *reader of this* to ascertain by careful watching just when and what is the source of his surplus honey, so as to work accordingly.

After having determined when we may expect our harvest of honey, the next step is to secure the bees in just the right time for that harvest. If you have a field of grain to cut, you hire the laborers when the grain is ripe, not before or afterward, yet in keeping bees hundreds pay no attention to the matter of securing laborers, so that, as a rule, they are generally produced so as to become consumers rather than producers, and for this reason we often hear persons claiming that bee-keeping does not pay.

The queen is the mother of all the bees in a colony, she laying all the eggs producing them. Under the greatest stimulation, she is capable of laying from 3000 to 4000 eggs a day, yet often she is laying only from 500 to 1000 eggs daily at the time she should be doing her best. After the egg is laid it takes three days for it to hatch into a little larva. This larva is fed six days, during which time it has grown so as to fill the cell, when it is capped over and remains hid from view for twelve more days, when it emerges a perfect bee. This bee now works inside of the hive for sixteen days more, when the colony is in a normal condition, doing such work as feeding the larvæ, building comb, evaporating nectar, etc., when it is ready to go outside as a field laborer; and at forty-five days, during the working season, from the time of hatching, it dies of old age, and another generation takes its place.

From the above it will be seen that the egg must be laid at least thirty-seven days before the honey-harvest in order that our bee have the opportunity of laboring in that harvest to the best advantage.

Now, if the harvest is basswood, commencing to bloom, say, July 7th, the egg for our laborer should be laid on or before June 1st. But how shall we secure the laying of the eggs just when we want them? There are several ways of doing it, such as feeding the bees thin sweets when you wish the queen to lay more prolificly; giving young bees from other colonies that will feed the queen an extra amount of egg-producing food, etc.; but I will speak here only of the plan that has proven the most successful in my hands, with the least drawback, of any I have ever used. About May 10 to 20, according to the weather (if warm or an early season, the 10th; if cool or a late season, then the 20th), I commence to do what is known as "spreading the brood," which is simply reversing the brood-nest at this time, putting the combs having the least brood in them from the outside in the center, and those having the most brood on the outside. This stimulates the queen to fill these nearly broodless combs with eggs clear down to the bottom and out at the sides, laying twice the eggs she had been during the days just past. In a week or so the combs of eggs and larvæ are spread apart, and a frame of comb having honey in it set between them. The removing of this honey causes great activity; the queen is fed abundantly, and the comb is filled with eggs in a "twinkling." If the colony is strong in bees, and we have the combs of honey on hand, two combs can be set in at this time. In a few days more the brood is reversed again, soon after which the brood is likely to fill every comb except the two outside ones, and these will soon be admitted into the brood-circle. This plan of manipulation causes the queen to fill the cells much more quickly with eggs than she would otherwise have done, and thus many valuable bees are gained, so that there will be a multitude of laborers at the right time, and, as I have often proven (by manipulating one row of hives in the yard, leaving another row untouched), nearly twice as many as there would have been had the bees been allowed to take their own course. In this way the best possible results in honey are secured, and I would advise any beginner to familiarize himself with this method.

HEADS OF GRAIN FROM DIFFERENT FIELDS

DUCKS AND BEES; A HARD WHACK AT THE EDITOR; T SUPERS VS. SECTION-HOLDERS.

Mr. Root:—I notice on page 222 you say that ducks and bees thrive nicely together, quacks to the contrary notwithstanding. Now, if you are right I am one of the quacks you speak of, for, ever since all our young ducks died with their throats full of bee-stings, I have been making the ridiculous statement that *young* ducks and bees do not thrive at all together—at least, mine all died. I have never dared to try to raise any since, but I wanted to this year; and I'd give quite a little to *know* you are right Some of my neighbors claimed last season that my bees were killing their young ducks, as several had died with stings sticking in their throats; but perhaps it is a common thing for live ducks to have bee-stings sticking inside their gullets, and perhaps the bee-stings did not cause death; but it looks rather bad.

I notice on page 208 you call for a show of hands from those who have used both the T-super and section-holder arrangement; and as my name is *Hand*, and as I have used the T super ever since it came to light, I ought to be a judge of *its* merits by this time; however, I have used the section-holder only the past season. I always considered the section-holder a wide frame mutilated to fit a super which was made for some other arrangement; and after one season's use I am convinced that the wide frame was completely spoiled by the mutilation, and I have 200 of them I'd like to give to some one who would take them away, as I shall never use them again. I think a wide frame or a bottom slat is preferable to a section-holder. The T super is a very good arrangement, and I prefer it with the T tins nailed fast. I think your Hilton super is about the best arrangement for comb honey.

Wakeman, O. J. E. HAND.

[I really enjoyed the above, even if it did leave me a little worsted. I like to have any one talk right out plainly—that is, providing he does not accuse me of being dishonest and of seeing nothing but the almighty dollar when I suggest an improvement in hive construction. I shall have to acknowledge that friend Hand has had more experience with ducks than I have—at least, it has been of a kind that counts for more than mine; but, my, oh my! What kind of bees does he keep? In my rambles among bee-keepers over the country, I have seen ducks and bees together in the same yard. If I remember correctly I asked the question whether the bees stung the young ducks; but the very idea was ridiculed.

Regarding the T super, I would state that the section-holder was made topless to facilitate the insertion and removal of sections. My experience has shown that a top-bar to a wide frame is not absolutely necessary for the majority of bee-keepers. Although friend Hand expresses himself most decidedly in favor of the T super, I couldn't help a "smoile" when I came to the place where he said he wanted his T tins *fixed*, not loose. Please don't tell Dr. Miller that.—ED.]

BUCKWHEAT HONEY; DOES IT COME FROM A CROP SOWN EARLY IN THE SPRING? ETC.

I noticed in GLEANINGS some time ago the question asked if buckwheat yielded honey early in the season. We have sown it for several seasons as early as we could in spring, and not have it freeze out, mostly for the honey we receive from it. There is always a good flow when we have cool damp nights with a hot sun the next forenoon. It will not yield much, however, until it has been in bloom for some time. We have raised two crops of the Japanese in one season.

SELLING EXTRACTED HONEY IN BUTTER-DISHES WHILE IT IS CANDIED.

In regard to candied extracted honey, I think it the best plan to put it in tin pails for retail, and educate our customers to use it in the candied state. There are many who like it best this way. One of the dealers here has worked up a good trade this winter. He has the honey in large jars, and cuts it out and sells it in butter-dishes. I can not see any reason why honey should be taken back when candied. I put all my honey for retail in tin pails, with instructions on label for reducing to liquid if desired. J. T. VAN PETTEN.

Linn, Kan.

WATERING BEES; HOW TO KEEP THEM AWAY FROM TROUGHS, ETC.

I have been troubled with bees drowning in stock-watering troughs, mostly in cool weather in spring and fall. As a preventive I use a bucket or tub with a sugar-sack spread loosely on top, and a brick-bat to sink the center of the sack into the water. I also have a few auger-holes in the pail or tub. Then I take pieces of a gunny sack and wrap around corn-cobs and put into the auger-holes loosely, so that the cloth will be wet on the outside all the time. The bees seem to catch on to these cobs and rags in a very short time, and no trouble by stock, or bees drowning. I usually put a little salt in the water. O. C. BURCH.

Fairhaven, Neb., Oct. 25.

HOW TO FILL SECTIONS WITH PIECES OF COMB.

Break the comb in two or three inch pieces; place it in a basket; fill another basket full of sections. Now make a small fire in the cook-stove (just previous to this stage of your proceedings get your wife off on a visit). Now get your baskets and a chair, and sit down by the stove. As soon as it is hot enough to melt the comb you are ready for business. Take a section and place it upside down on the stove; be quick now or your section will get too warm. Next place a piece of your comb on the stove close by the section; as soon as the edge of the comb has melted level, quickly place it in the section and set to one side. After you get the hang of it you will be surprised how quickly you can fill a super. Some one might ask, "Will bees readily enter a super prepared that way?" Well, I should say, try it and see.

Marshfield, Mo. J. D. WHITTENBURG.

BEES IN CALIFORNIA.

Friend Root:—Inclosed I send a newspaper clipping which may be of interest to you and your readers. It expresses the situation, with but small variation, of the bee interests in this State

> The apiarists of this county will suffer heavy losses this season, as will stockmen and sheepmen. In an interview last night, M. H. Mendleson, a prominent bee-keeper of the county, reviewed the condition of the industry as it is to-day. He stated that there would be no honey produced in this county this year. But instead of a yield the bee-men would be compelled, on account of the dry season, to feed their bees in order to carry them through. He has between eight hundred and nine hundred stands. It is his purpose to destroy his weaker stands, about one hundred, and feed honey to those remaining.
>
> J. F. McIntyre, who has a large number of stands, will remove this week from the Sespe to Bakersfield, 260 stands. In 1886 there were 10,000 stands in the county, now there are but about eight thousand. It is estimated that there are about seventy-five bee-keepers in the county. On the average the cost of production is about 4½ cents per pound. Last year the market price ruled below this point. With the best of care, the average loss of bees is from 2 to 3 per cent. per annum. This year, as usual, many keepers can not afford to buy honey to feed their bees, and therefore the bees must starve to death. From one-third to one-half of the bees in the county will die. The price of honey will therefore be soon on the onward march.

The few who can get their bees near large tracts of orange and lemon trees have a fair show of getting something, unless cut off by cold weather. All citrus fruit is irrigated, therefore the dry weather does not affect that so seriously, as the water for irrigation comes from snow and rain in the mountains, which are more abundantly supplied with moisture than the valleys.

Mr. E. Hart, of Pasadena, took two tons of orange honey last year from about 100 colonies. Of course, it was not entirely pure orange honey, for in good seasons there are many honey-plants in bloom at the same time as the orange; but it was very nice honey, as I can testify from personal examination.

The great drawback to orange honey is its uncertain yield, being so sensitive to weather conditions. It would never pay to keep bees where orange was the only source of honey.

G. W. Brodbeck has moved his bees some 40 miles to alfalfa and moist-land pasture. He is a "rustler," and will make it win if any can.

J. H. Martin thinks of leaving his bees where they are, as there are some citrus trees near.

So it goes with all the bee-men—all are preparing for the worst. C. A. HATCH.

Pasadena, Cal., Mar. 25.

THE IMPROVEMENTS ON HIVES MADE AT THE HOME OF THE HONEY-BEES; THE VALUE OF THE VENTILATED BOTTOM-BOARD.

My gable cover is much like yours, except that the top boards are ⅝ inch thick; they overlap, also, about 1 in. over the sides and ½ in. at the ends. The space between upper and lower boards is also greater than in yours, as there is 1 in. space between the boards at the closest point; and to prevent hornets and other insects from causing any annoyance a strip of zinc is run into grooves along the sides. The groove to run the zinc into is right along the edge of the upper surface of the lower board, and one inch from the lower edge of the upper board. This groove in the upper board is a *great* factor, also, in preventing *any* tendency to curl or twist. It is put together with 2¼-inch nails principally, so is particularly strong, and not too heavy. For this climate it is certainly a thing of beauty and a joy; and the more experience I have with it the better I like it. With the lid as described above, the dovetailed hive-joint (a joint that the fiercest sun has little effect upon), and the deep-entrance bottom-board, this hive is now *practically perfect*.

I am not sure which has the greater influence in preventing swarming—the improved ventilated gable cover or the deep bottom-board; but that each has a powerful influence is unquestionable. This season I ran over 300 colonies in the home apiary; and while a big proportion of these were utilized in queen-raising, a good number also of the choicest colonies were run for extracted honey and for the production of first-class drones. The season was a magnificent one; and while these colonies were powerfully strong in three-story ten-frame hives, not 5 per cent swarmed during the entire season. What a striking and pleasing contrast is this to my experience of years back, when colonies used to get fairly swarming mad, and a dozen disorderly swarms a day the rule! Instead of chasing after swarms almost the entire day I can now get through twice as much work. Just reflect a while, and calculate what improvements have been made in our methods of management in the past few years, and you can not fail to come to the conclusion that one man can now manage double the number of colonies that he could some years ago. Hurrah for the Home of the Honey-bees, and your grand corps of workers! H. L. JONES.

Goodna, Queensland, Aus., Mar. 12.

[Such a letter stands out in pleasant contrast with one or two others whose writers seem to have the impression that The A. I. Root Co. make improvements simply for the sake of doing it, or for diverting trade away from competitors. We never put out an improvement but that we thought it might prove to be a labor-saver to the bee-keeper in the end; and why should we make future generations plod along year after year in the same old ruts when we can see new and better roads to travel over?—ED.]

OLD-STYLE WIDE FRAMES FOR PLAIN SECTIONS.

Why can't I use two cleated separators on my wide frames, and hold them in place by a ⅝-inch brad in end cleat (each end), driven into the end-bar of the wide frame? I was just trying the separator you sent me, on one of my frames; two of them will just fill the bill. E. E. MCCOY.

Noble, Ill.

[You can use the fence on the plan you indicate, without any trouble whatever. It is never necessary to discard wide frames to take plain sections.—ED.]

BEGINNERS' QUESTION-BOX BY E. R. ROOT

J. F. H., Mass.—Where one intends to use full sheets of foundation I would by all means use wired frames; and if I intended to use only starters I would have wired frames just the same. The wires tend very materially to stiffen the combs. This is an advantage during times of extracting, and of moving bees.

A. P. B., N. J.—For a cure for foul brood, see page 34 of the catalog we are sending you—the last paragraph or two. The honey will be all right if it is boiled for a period of four or five minutes. I would not advise any one trying to get a living off from 150 colonies in average localities. The seasons are too uncertain. Bee-keeping should generally be combined with some other business.

G. P. A., Pa.—We can not understand why your honey should be bitter, unless it is that the bees have been gathering nectar from some weed that may be prevalent in your locality. When this bitter honey comes in, watch the flight of the bees and note the direction they are coming from; then trace them to the source from which they gather the nectar. Having found this, take one of the flowerets and see if you can squeeze a drop of nectar out of it. If this drop tastes bitter, then you can easily determine the source of the bitter honey.

EDITORIAL
BY E.R. ROOT

I WISH to call special attention to a valuable article by Chalon Fowls, on the treatment of severe cases of stings. It will pay every one to read it.

A FRIEND, who wishes his name kept private, has sent us $10 for the Shawneetown sufferer, Mr. Thomas McDonald. The amount has been forwarded.

OUR space is so crowded that, notwithstanding the extra pages, I have been obliged to leave out of this issue a continuation of my visit among the great buckwheat-fields of Schoharie Co., N. Y. I hope to begin the series again in our next issue. In the mean time I gladly give place to some excellent articles touching vital questions of our industry.

IN a private letter just received from Mr. W. Z. Hutchinson, in referring to the size of worker-cells, as discussed by Mr. Cowan and myself, he says:

> I think that you and Mr. Cowan misunderstood Mr. Cheshire. See page 261 of April 1 GLEANINGS. When Mr. Cheshire says that the *length* of a worker-cell is $\frac{15}{32}$, and a drone cell $\frac{9}{16}$ *in length*, I think that he means the *depth* of the cell. In one sense that *is* the *length* of the cell. Perhaps this is not important, but Mr. Cheshire has enough to answer for without this.

I think Mr. Hutchinson is right. I can see how Mr. Cowan might have misunderstood Mr. Cheshire; but, as Mr. H. has explained it, the measurements of both men are correct.

PROF. COOK AND SWEET CLOVER.

MY attention has been called to the following paragraph in the *Bee-keepers' Review* for April:

> "Sweet clover is an excellent honey-plant. The amount and quality of honey from it is rarely surpassed. I have grown the plant in Michigan for bee-feed for years; but I have never been able to get my cows or horses to eat it. I think the plant is worthless except for bees."—PROF. COOK.

The above is all right, with the exception of the concluding sentence. Now, if Prof. Cook really did write and sign his name to the words, "I think the plant is worthless except for bees," I can not believe he meant to say just that. For years past, not only our bee-journals but most of our agricultural periodicals have been discussing the matter as to why farm stock eat sweet clover with such avidity in some localities, and do not in others. Certainly our good friend Cook is aware of this. If so, how could he ignore such testimony, even if he has never been able to get his own cows or horses to eat it? Another thing, nobody that I know of has ever questioned its great value as a crop when plowed under to enrich poor soils. On the alkali lands of Arizona and Utah, sweet clover is almost the only remedy for soils so strong with alkali that nothing else will grow. After the crop of sweet clover is turned under, almost any thing else may be planted. Our experiment stations have made repeated tests in regard to its great value for plowing under, and I have never yet heard of a failure. There is an immense traffic in the seed, north, south, east, and west, and thousands of people are buying the seed, and sowing it, who have nothing to do with bees, and no interest in bee culture. I am sure Prof. Cook will modify his statement, or tell us what he meant to say when he used such a sweeping assertion.—A. I. R.

THIEVES AT OUT-YARDS; HOW THE $100-REWARD SCHEME IS WORKING.

SOME time in the early part of last winter, you will recall that thieves had been making inroads at our out-yard, and that we had a sign put up, offering $100 reward for the arrest and conviction of the parties who were stealing honey from our apiary some two miles north of town. The "reward" did its work admirably. I visited the yard a few days ago and found that it had not been touched, although it had been tampered with several times previous to the putting-up of the sign.

This is the way the scheme works: The thing got to be talked of around town, and one or two said they were going after that $100. The guilty party, whoever he was, must have "smelled a rat" or rather the cat; that is, heard that two men were after him; and if these lines should reach his eyes I wish to notify him that we are still after him, and that the $100 will be planked down very speedily as soon as he is convicted.

But at Neighbor H.'s out-yard, some two miles south of town, the sign did not have quite the same effect. It was torn down, and his biggest colony was robbed of its honey, and half a dozen others had evidently been "hefted," to get at their weight, for the frames of the loose-spaced kind were all chucked together, the hives evidently having been turned over on one side. Perhaps the thieves at Neighbor H.'s yard thought he would not follow them up as closely as we would have done; but I have asked him to put up another sign, and make a little effort to find out who has been looting his hives. If he makes a general stir in the immediate neighborhood, and says The A. I. Root Co. has $100 all ready to turn over as soon as the thief is arrested and convicted, that may have the desired effect. But one conviction would do more good than a dozen signs, or "scares," and we are rather aching to turn over the money. We made a general stir in the neighborhood at our out-yard, and the neighbors are on the watch, for the work is usually done at night.

A. I. ROOT ON THE COST OF IMPROVEMENTS.

I BELIEVE that so far, dear friends, I have had little or nothing to say in regard to this matter. Perhaps some of you might like to know what I think about it. In the first place, nobody is obliged to adopt the plain section unless he chooses. We furnish both kinds, and expect to keep on doing so. I know it is unfortunate, making so many changes. Here at the Home of the Honey-bees we realize this, perhaps, more than anybody else. It pains me more than I can tell you to see the things I have spent so much money and so many sleepless nights over, thrown away or set aside for something new, and, oftentimes, comparatively untried. Sometimes I am right in thinking we had better stick to the old; but oftener the boys are right in adopting new ideas and putting in improvements. Let me give you an instance. We had a job printing-press that was a model of speed and good work when it was bought. While it was still doing good work, Ernest bought a new one and the old was pushed aside. Perhaps I was not even consulted in the matter, and may be I "grumbled" some. But when the boy who ran the press told me that it was making a saving of enough to pay for itself in *one year*, and that we should really make money to put the old one in the scrap-heap (showing me the figures in regard to its superior and rapid work) I became good-natured all at once, and was ready to apologize for my fault-finding.

There has been considerable said about The A. I. Root Co. and the "almighty dollar." Dear friends, there is not one of us here who would put a burden on our bee-keeping friends for the sake of putting money into our pockets. If we did, how could we consistently say our prayers at night before going to sleep? We recommend changes or suggest changes because we think it will benefit the honey-producer. We may make mistakes, but we certainly are not bad at heart, any of us.

Just now we are so overburdened with business that we have talked about stopping our advertising. Mr. Calvert has told you something of this already. We are *not* greedy for more jobs, nor are we introducing new-fangled notions to get more money; but we do try to look ahead and study the best interests of the honey-producers of the world. Our good friend and old standby Doolittle runs up a lot of figures until he gets to a million of dollars. Now, if this million of dollars should be a bad investment, it would certainly be a sad thing; but suppose, on the other hand, the plain section should be a benefit—at least a little benefit — to each bee-keeper, this would throw the million of dollars into the pockets of the bee-keepers, instead of the way friend D. puts it. We do not know positively how this thing will turn out; but, like new plants and new vegetables, those who want to be up with the times should try these things on a small scale. I do not think the plain section and fence are on a parallel with the new fruits and vegetables, for the former *have* been tried and are being tried in different places, in Doolittle's native State especially. The thing that commended the plain section to my notice was that it is a saving of lumber, and they are cheaper to make, or will be cheaper. Now, do not call me hard names because we do not now offer them cheaper than the regular old style, for it costs something to get up new advertising and new machinery for new things, and at the start they cost more than later on. If reports are as much in favor of the plain section as I confidently expect them to be now in a very few months, we give you our promise that the plain section will be cheaper another season than the old kind.

There are other things I might explain, by taking time; in fact, I am ready to give our reasons for any thing we do that looks inconsistent, whenever it is worth while to take the space. We certainly are not trying to get ahead of other supply-dealers, for we can not take care of all the orders we have; and at present we are buying hives and sections of almost all other supply-dealers who have any to spare; and in order to fill orders promptly we have bought goods by the carload; and where we could get no concession from retail prices we have turned them over to bee-keepers for exactly what they cost us. We like to see business booming, and we would rather supply our customers promptly, even though we do not make a copper in the transaction, than to see them suffer loss by delay in getting their goods.—A. I. R.

TESTS OF COMB FOUNDATION; MICROMETER MEASUREMENTS OF THE BASES.

R. L. TAYLOR, of Lapeer, Mich., has been continuing his foundation experiments, and in the *Review* for April he gives the results. Deep-cell (or drawn) foundation, thin and extra thin, of two different makes, Given and the Bingham (or no-wall), were given comparative tests in the hive. In making these tests Mr. Taylor had in mind three things; viz., "Which do the bees work most readily? Into which will the bees put the most honey in the same time, under like circumstances? and which will they draw out the thinnest, or most like natural comb?" The various grades of foundation were placed in alternation, with Given sections in a case, as near the center as possible, and all the sections were worked more or less. Mr. Taylor says the preferences of the bees were readily discovered. He found the drawn foundation "was used at once, almost, for storing honey." "It appeared then that it was ahead of the plain foundation. . . . at the end of the honey-flow . . . it weighed only 7 per cent as much as the Given;" and when measured as to thickness of its base it was found to be 37 per cent thicker than that of natural comb. Continuing, he says:

> As to the other sorts of foundation, the two Root samples were worked at about equal pace with the Given—the kind called "thin" perhaps a little more rapidly. The Lansing "thin" was behind the Given in that respect; and the Bingham and the Lansing extra thin were behind in a more marked degree. To determine the thinness to which the bees worked these foundations, pieces of the comb made from them were cleaned and sent to Dr. Beal, of the Agricultural College, for measurement.

I will not attempt to give the tabulated result, as many people either do not care to study out an array of figures, or could not properly interpret them if they did. It is enough to state that the base of the extra thin stands 56 ten-thousandths, and drawn or deep-cell very nearly 100 ten-thousandths, or twice as thick; and the Bingham no-wall about 43 ten-thousandths, and the natural comb about 67 ten-thousandths. It is apparent from *these figures* that the no-wall had the lightest base of any of them, and the drawn the heaviest by considerable. But these tables would have been much more interesting to me if we could have known the relative thicknesses of the bases of the foundation *before* the bees worked on them, as well as after.

We have held all along that the bees would not thin the *bases*, but would thin the *walls*. While this is practically true, some measurements that I have made to-day with a micrometer measuring ten-thousandths of an inch lead me to believe that the bees do thin the bases slightly. From various measurements of different foundations, especially of our own make, I find that the base of ordinary "thin" foundation running 11 feet to the pound, and before the bees had worked it, stands about 71 or 72 ten-thousandths of an inch thick; extra-thin, 50 to 60 ten-thousandths; the 18-feet-to-the-pound article, from 10 to 50 ten-thousandths. Our own measurements of the base of *natural* comb differ from those made by Prof. Beal. A year ago we found that the base of natural comb averaged about 30 ten-thousandths of an inch thick; but I notice that Prof. Beal makes it very nearly 67 ten-thousandths, or more than twice what we found it to be. Accordingly, to-day I went out to the honey-house and selected a number of pieces of natural comb. My measurements ran all the way from 29 to 41 ten-thousandths. A fair average of the last measurements, or those I made to-day, would stand about 36 ten-thousandths. I would, therefore, find the base of natural comb about half as thick as those attributed to Prof. Beal in the *Review*. While I think he made his measurements correctly, I feel morally certain that he got hold of some samples of natural comb that the bees drew out slowly; for I have found it to be true that bees will make comb twice as heavy under some circumstances as they will under others; and I am therefore very confident that 77 ten-thousandths (Beal's measurements) is altogether above the general average.

Mr. Taylor, on the assumption that the base of comb from no-wall foundation was 43 ten-thousandths, and that from natural comb 67 ten-thousandths, concludes that, in point of thickness, the Bingham was thinner than the natural. If I am right as to the average thickness of natural-comb bases the conclusion is hardly correct, unless Prof. Beal were measuring *drone* comb, the base of which I find to be all the way from 60 to 77 ten-thousandths of an inch thick. If that were the case, it would hardly be fair to compare drone with worker comb.

I do not know, but I shall expect that, if we make 18-feet-to-the-pound wall foundation having a base averaging about $\frac{3}{1000}$ of an inch, we shall have results in bases, as between comb from such foundation and that built entirely by the bees, that will defy even the connoisseur or micrometer to detect the difference. I do not wish to go on record as saying that we shall be able to do it, but I *hope* we shall.

In speaking of drawn (deep cell) foundation we freely admit—indeed, we did so last fall—that the septum of such comb, after the bees got through with it in many instances, was a good deal thicker than it was desirable to have it; and the results of Mr. Taylor's experiments are no surprise. Mr. Weed is very confident that his natural-base drawn foundation will have as thin a base as that made by the bees. If it does not, or fails to fill the bill, you may depend upon it that we shall not push it on the public.

Mr. Taylor's table is very interesting, more especially as it goes to show that perhaps foundation-makers have not been as particular as they should have been in getting the *bases* of foundation as thin in the first place as they might be. The "thin" foundation of our make that Prof. Beal measured showed a base, after the bees worked it down, that is about twice as thick as the foundation we are now making of the *same grade*. I do not know that we ever made any that had a base as thick as $\frac{90}{10000}$ of an inch; and I am rather of the opinion that, through some error, Mr. Taylor received a heavy grade. The thickest base I can find in any of our "thin" foundation is $\frac{70}{10000}$; and assuming that the bees do thin it slightly on working, it would probably stand about $\frac{50}{10000}$.

Perhaps, dear reader, you may think it impossible to split hairs as closely as this. We have in our machine-shop a delicate micrometer, made by Brown & Sharp, that will measure off the ten-thousandth part of an inch as easily and accurately as you would measure off eighths of an inch on a foot rule.

It may be interesting to you to know that the paper on which this is printed averages $\frac{30}{10000}$ of an inch thick — the thickness of the base of natural comb, and, like natural comb, the greatest thickness was 32 and the least 27 ten-thousandths.

POWERFUL COLONIES AND THE SWARMING PROBLEM; THE BRITISH FRAME; BIG ENTRANCES.

"BEE CHAT" is the title of a new quarterly edited by Samuel Simmins, Heathfield, Sussex, England. The subscription price is one shilling per annum; but I have no doubt it can be furnished to American readers for 35 cts. The first number is quite "chatty," and full of interesting bee-lore, largely editorial. The editor says he has no intention of competing with his elders, the *British Bee Journal* and the *Bee-keepers' Record*, whose circulation and reputation have been so long established. He would fill a niche all his own.

I was particularly interested, however, in what he says on the subject of powerful colonies as honey-gatherers. He deplores the fact that British bee-keepers have adopted as their standard the British frame, the dimensions of which are 8½x14. Then he adds:

> There is no single instance where permanent success has been attained on a large scale, where this frame has been adopted. Why? Echo repeats "Why!" The answer is given forth, as the record of repeated failures and unlooked-for disasters, "*Because the Association frame is not adapted to the needs of commercial bee culture.*"

He goes on to cite the fact that the most extensive bee-keeper in the world uses Quinby frames, the size of which is 18½x11½, or nearly double the dimensions of the British frame. He refers to some reports from bee-keepers in his own country who had used frames about this size, and obtained some large crops of honey. He next quotes from our own Dadant, who, in March 1st GLEANINGS for 1894, reported they had tested, side by side, the American, Langstroth, and Quinby frames; but after a series of years, covering many comparative tests, the Quinby was found to be unquestionably ahead. Dadant is further quoted as saying that he had letters from Switzerland, Belgium, France, and Spain, praising the large Dadant hives, showing by comparison that they were more profitable than smaller hives.

Our own readers know what a leaning I have toward large colonies, and how I have more than once said that, in our experience at least, they would get more honey, both comb and extracted, than the smaller ones; but I can not see that these results are necessarily attributable to a large frame or to a large hive rather than to an equally large hive made up of one or more stories. According to my notion it is not the size of the brood-frame or the size of the hive so much as it is the *numerical strength of the bees themselves.* I do not know positively, but I am very confident that, if Mr. Dadant would try two-story Langstroth hives over against his one-story Quinbys, he would find little if any difference in the amount of honey secured or in their disinclination to swarm; and, what is of prime importance, he could handle his colonies by piece-meal, one story at a time.

As I have said once or twice already in these columns, our "big double-deckers" at the out-yard are the ones that went right on minding their own business, piling in the honey, and not swarming, while the single-story colonies scarcely made a showing. Indeed, I believe that the best solution of the swarming problem, whether at the home or at the out-yard, is big colonies in two-story Langstroth hives. In some cases, at least, it may be advisable to have three stories. If other localities were like our own I would guarantee that there would be very much less swarming, and more money in the pockets of bee-keepers at the end of the season.

THE CONTRACTION FAD.

Some eight or nine years ago, contraction was all the rage. It seemed to be generally agreed that ten-frame Langstroth colonies should be contracted down to six or seven frames. "Why," said the advocates of contraction, "if we give the bees full ten frames below they will pile the surplus all in the brood-nest, and let the supers severely alone. Italians especially are disinclined to go above if they get two or more frames for honey below." I must confess that I was carried away by this sort of talk, and so were hundreds and perhaps thousands of others. But, oh how the bees did swarm, and no wonder! The whole trouble was, the queen did not have brooding space enough, and the bees were quick to "catch on" to the fact; and the result was, the queen and bees connived together for larger quarters.

THE SELF-HIVER FAD.

Then followed the craze for an automatic hiver. "Why," said the advocates of these new-fangled things, "this staying at home and taking care of swarms, and having a man at each yard, is a tarnal nuisance and expense. We have got to have something that will take the place of labor." A few fell "into the swim," and for a time at least felt that the self-hiver, or what subsequently developed the Langdon non-swarming method, was the thing.

Along about this time bee-keepers began to complain that the "honey seasons were not as good as they used to be," and many thought they would be satisfied if they could get on an average 25 to 30 pounds of comb honey per hive. Several Michigan bee-keepers told me they considered they were doing well to get even 10 pounds per colony. Right here do not forget the fact that contraction was used more extensively in Michigan than in any other State.

EXPANSION INSTEAD OF CONTRACTION.

How would it do if we were to begin to talk *expansion* instead of contraction? If we not only talked it but practiced it by working our colonies in two or three stories, we should find, I verily believe, that the little one-story colonies were not "in it."

It would not cost a cent to try three-story colonies. "But," some one says, "I have not any extra supers." Well, take some of those little colonies of yours, and unite them all into one big one; but before doing so, select the best breeding queen out of the lot; for it it is necessary to have *good queens*, not much over two years old; and it is important, also, to have wide-mouth entrances, for these big colonies not only must have plenty of room, but a big open entrance.

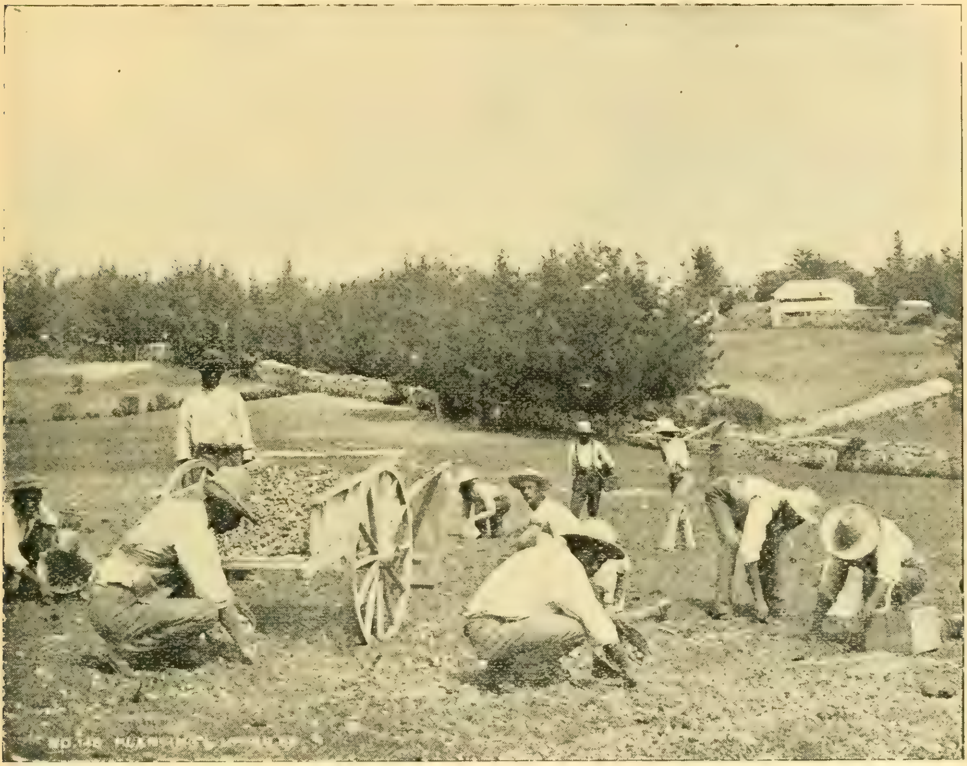
Our readers all know that some of our most extensive bee-keepers, and most successful ones, are those who use large colonies. Find me a bee-keeper who produces his honey by the tons and by the carload—who strives to keep his queen in one brood-chamber, Langstroth size, and I will point you out a dozen or more who use big colonies, and get the honey—and the *money* too. W. L. Coggshall uses double-deckers. P. H. Elwood and Capt. Hetherington use single-story colonies, but they are on Quinby frames. Julius Hoffman, of Hoffman-frame fame, uses double-deckers, his frames being square, or, rather, on the deep order. J. F. McIntyre uses two and three story colonies, Langstroth size, and he prefers the ten-frame width to the eight, and I might go on and name more.

Now, brethren, come on and let's discuss this question. It is high time we were talking about it, so that we can put it in practice for next season. Let us see whether the trouble with the poor honey crops of late has been *all* due to the season or all to the hive, or, what is probable, to both.

NOTES OF TRAVEL
BY A. I. ROOT.

BERMUDA LILIES.

When I said the island of Bermuda is mostly occupied with onions and potatoes on every available rod of soil, I should have mentioned the Bermuda lily-fields. I think it was Gen. Hastings who first introduced the industry, and I am told he made considerable money out of it. That is all right, for the man who inaugurates a new crop for an isolated people like the Bermudans ought to have his reward. For many years the crop was very profitable, and every thing was clear sailing; but, alas! after they got to growing them by the acre a sort of blight set in. Whether this is the same thing as the potato-blight or not, nobody knows; but I believe they have succeeded, or at least partially so, in circumventing the blight by the use of fungicides or special treatment. The bulbs are planted very much as they plant potatoes—see GLEANINGS for March 15. We give you a picture of a field with the ground already prepared, and the men at work putting in the bulbs. I do not see the strings in the engravings, but I think there are strings or marks somewhere. The bulbs are put in about the same as potatoes, and about the same distance apart, and the cultivation is about the same, although there was some talk, when I was there, that there was less trouble from the blight when weeds and every thing else were allowed to grow up along with the lilies, and some people were investigating along that line. I once knew a man who claimed that strawberries would do better among grass and clover. He said the grass and clover would keep the sun from scalding the berries and foliage. I do not believe our experiment stations would need to *recommend* testing that sort of treatment.



PLANTING THE LILY-BULBS.

The picture gives you a glimpse of the way the fields are fenced off. The fences are stone walls, varying in thickness and height. If there is very much stone to be picked off the land, they make the fences thicker and higher. Thus you see the fences are more to get rid of the rocks than to keep out intruders.

As the plants come up they are ordinarily cultivated about like potatoes. They were just beginning to bloom when I left the island in the latter part of February. Probably no description or photo can help the reader to realize how a field of lilies in full bloom looks. Our artist has, however, done pretty well.

Most of you have seen these lilies in greenhouses, or perhaps around your homes; but I hardly believe that many of you have seen a plant containing over a hundred of these great trumpet-shaped blossoms. No wonder Bermuda lily-bulbs are a favorite almost all over the wide world. But little use is made of the blossoms in Bermuda. Some attempt has been made, I believe, to ship them to New York city, but the expense is too great, and it is a little difficult to keep them in good order. The crop is grown for the bulbs; and as these vary in price all the way from a few cents up to 25 cents each, it is quite an object to grow the finest and highest-priced bulbs. I did not pay so much attention to the lily-bulb business as I did to the potatoes and onions, as the lilies were a little out of my line. If I remember correctly, however, the bulbs are grown something as we grow potato onions and multiplier onions. The largest bulbs, however, I believe, as a rule produce the largest blooms and the greatest number of them. If it were not for the blight, Bermuda could probably supply the world with bulbs. I asked where they originally came from, and was told that they were indigenous to the island, or my informant thought that the Bermudas gave the world this beautiful Bermuda Easter lily.

A FIELD OF BERMUDA LILIES IN FULL BLOOM.

OUR HOMES,

BY A. I. ROOT.

Thou hast loved righteousness and hated iniquity.—HEB 1:9.

My attention was called to the above in our Bible-reading at home this morning. That first chapter of Hebrews struck me as being unlike almost any other chapter in the Bible. The inspired writer speaks with authority in regard to many things that are evidently beyond human comprehension. He touches on subjects that the great Creator has evidently placed beyond the range of human intelligence. He gives us a glimpse of the place in creation that Christ the Son of God takes. Then he contrasts him with the angels, of which we really know so little, unless it is that they are messengers, as it were, between the infinite and the finite. In this connection comes that wonderful address to the Son of God in the ninth verse of the first chapter.

There are people in this world, who, may God be praised, as a general thing love righteousness and hate iniquity. Why, come to think of it I believe the greater part of us love righteousness when not stirred up or sway-ed to the right or to the left by some of these many human impulses and feelings that so often control us. If we could get rid of selfishness we might love righteousness and hate iniquity right along. All around me I catch glimpses every day of beautiful characters. I love to talk with these friends who are helping us, and I love to look into their faces. As a rule they are working faithfully and honestly—that is, when nothing occurs to try them severely.

A good many love righteousness and hate iniquity unless they get angry. Anger makes a man crazy. For the time being he is not himself. Even a little stirring of his feelings may swing him around so for the time being that, without knowing it, he loves iniquity.

During this exceedingly busy season we have had a good many breakdowns—more this past spring than ever before. When such things happen the best men are selected, and each goes to work with brain and muscle to make good the damage, that he and his fellows may go on with their tasks. It is often a serious question as to which is the best way to get the machinery started. One man has one plan, and another a different one. We can not wait long to deliberate; so the head or heads of that department have to decide. The man whose counsel was rejected would have to be a little more than human if he did not feel a little bit pleased to find himself right and the others wrong. Important men often have to go without their meals, and sometimes work nights, even after they have been working all day, in order to get things going. They would have to be more than human if they did not at times get irritable. Somebody thoughtlessly carries off the tool that is wanted most. Sometimes the breakdown reveals the fact that poor worthless tools have been tolerated that hindered work, many times, more than they helped it along; but where there are so many things to be looked after, some of them will be neglected. When a roomful of skilled mechanics are waiting patiently for repairs to be made, you would think a man must be very bad indeed who would willfully prolong the period of waiting; yet I have known men to do this, simply because they were put out by something, or because they got contrary. I do not mean any particular man, but sometimes our best men seemingly, or for the time being, have acted as if they loved iniquity and hated righteousness. I do not know of any thing in this whole wide world that can entirely free us from such departures from the straight and narrow path except a *constant* love toward Christ Jesus, and a bright and *abiding* faith that God's eye is constantly over us, reading our very thoughts.

As I go over this matter, and think of my own wayward and sinful heart, I can only breathe again my little prayer, "Lord, help!" Perhaps I utter only the two words; yet those two words mean to me, "Lord, help me, by the help of thy Spirit, to be *continually* proof against the whisperings and promptings of the evil one; help me to keep down pride; help me to keep down self; help me, O Lord, to be meek and lowly, and easy to be led, even as I would that these friends of mine should be led in wisdom's ways."

Even in our domestic animals we see this peculiarity—this matter of temper, or this contrary spirit of which I have been speaking. We have in use two big stout horses—Mike and Jack. Both, as a rule, try to do what is wanted, and do it right. Mike has the greater strength; and when he is roused up by something that does not go right, he has not only the strength of a *lion* but something in his make-up that seems like a very *tiger*. When he was a colt he ran away with a cultivator dangling at his heels, and he has never forgotten it, and we have to be a little careful as to who shall handle him, or else his tiger temper may suddenly show itself; and before you know it he will be acting as if he loved iniquity *boiled down*. Jack is meek and gentle. He does the very best he knows how. He will work in the lumber-yard day after day, standing still anywhere he is put; never needs hitching to a post; and, in fact, if the men go away and leave him for a whole hour, and get clear out of sight, he will stand right there faithfully, patiently, and honestly, until they happen to want him again to pull up the car of lumber. Every time I go around that horse, or have occasion to use him, my heart warms toward him. I can pat him on the neck, and say, "Jack, I do not know what others think, but I believe *you* love righteousness and hate iniquity every hour and day of your life."

I realize, when I say this, that some of the men who know Jack pretty well will say that I am mistaken. I once saw a strange man jump into the wagon, and pick up the lines and start to drive him. He backed, threw up his head, and acted so that a bystander said he was ugly, and needed a whipping. I did not know what the matter was, but I felt sure that Jack was not ugly. Finally the man who drives him came around the corner and said, "No, no! don't whip him. His mouth is sore, and you must not pull up on the bits as you do with Mike. Give him a loose rein and you can guide him anywhere you wish, and he will go fast or slow, just as you wish; but do not whip or jerk him."

Now, friends, suppose somebody had whipped that horse for being ugly. Mrs. Root says they would not do it if *she* were around. No doubt thousands of horses have been whipped unmercifully when they no more needed it than did poor Jack at the time I have mentioned. Just think, dear friends, of giving a horse like that to a drunken man to drive!

Such things are sad to contemplate when it is only a domestic animal that is punished and abused when he is just as good as he can be. Not far from where I sit dictating, a boy is at work as busily and honestly and industriously as a boy well can work. He makes his work a study; he tries hard to do every thing right. He asks questions, and gets acquainted with people and things pertaining to his business. His whole mind is on his work. Even if he should see this I do not think he would know whom I mean, for I do not suppose it has occurred to him that his good conduct has been worthy of remark. When he first came here

I was a little prejudiced against him.* His former employer had turned him off, I was told, for bad conduct, and I rather expected to see something about the boy that was not just what it ought to be. But I have not seen it. Now, this boy was dismissed with hard and severe words as I have been told (he never said a word about it himself, mind you); but if he was attending to his work there as industriously as he has since been here, it is a burning shame. I wonder if it is really true with the boys as it is with the horses, that they are sometimes reproached and abused when they are in no way to blame in any way or manner, simply because their employer got angry or contrary, and for the time being loved iniquity rather than righteousness. These boys who are learning how to do things never write for the papers. They never tell *their* side of the story. That is not in print. Sometimes I have wished they did, that we might get a glimpse of things from the boys' standpoint. In my talks with them sometimes I get their confidence sufficiently to catch glimpses of the other side; and I tell you, friends, there *are* two sides to almost every thing. May God give us grace to see things once in a while from a boy's standpoint.

When I was over in Bermuda, on English soil, I caught some glimpses of the great wide world that lies outside of the United States. Let us endeavor to consider the things and circumstances that are outside or on the other side of these narrow lives we are living, and help us that we may unselfishly love righteousness and hate iniquity. Give us grace to say, even when angry, "Look here, old fellow, are you *sure* you love righteousness and hate iniquity at this minute as much as you usually do?" When you are making a trade, and you do not feel quite sure of the man you are trading with, how much would you give to know that *he* loves righteousness and hates iniquity?

In our business of late, with electricity, steam, water, power, and all the late agencies for controlling force, we have been considerably annoyed by meddlesome people; and we have had to put up notices requesting people not to touch certain complicated pieces of apparatus. We have also been obliged to forbid hands from one department going into another except on business. Notwithstanding this, tools are carried off, cranks are turned, and sometimes considerable damage is done. The heads of business talked the matter over, and declared that we would have to commence suspending or expelling those who broke over the rules. I urged that unexpected circumstances would come up; that a good many times we should find there were palliating circumstances, but I finally consented to the enforcement of some severe penalties. Not long afterward, a pipe was leaking in one of the basements, and damaging goods. I put a tub under the leak, and then went after a boy to carry the water away before the tub could run over. Luckily I met the foreman of one of the rooms, and asked him if he could spare a boy. He said there was a boy in the third story I could have as well as not, and then passed along out of sight. I feared the tub would run over before I could get around. I just then saw another boy carrying sawdust and shavings. I asked him hurriedly if the work he was doing was urgent. He said he guessed not; but to be sure I put it another way. "Will it make any difference if you put down your stuff right here and carry it down to the boiler-room after a while?" He said it would make no difference so far as he knew. So I took the boy down into the basement where nobody could find him and left him carrying water until the plumbers could repair the leak. Well, this little transaction of mine actually caused a shutdown of our whole lower sawroom, stopping all the machinery, and causing a lot of men to be idle for fifteen or twenty minutes. If we had put in force a cast-iron rule, as we were talking about, I should have been suspended or turned off because I stopped a boy in his work, without asking the foreman of that department if the boy could be spared as well as not.

Now, if we are going to love righteousness and hate iniquity we must be very careful about letting our indignation get the better of us. Do not boil over and become vehement at the rickety ways humanity has of managing, until you *know* whether the person meant to be bad, and needed punishment (like poor Jack with his sore mouth), or whether the offender really and deliberately *chose* iniquity. How many, many times I have declared to myself, if I didn't out loud, that I would "not stand this thing a minute longer," and then afterward find out that the neighbor who offended was as honest and innocent of any really bad intention as poor Jack, or myself when I stopped the boy in his work of carrying the sawdust away from a leaky dust-pipe, when stopping the boy caused the pipe to clog and fill up, necessitating another "shutdown." In this case, however, the boy was to blame. He should have *found out* what he was carrying the stuff away for, and what the consequences would be if he deserted his post without giving notice to anybody.

RECENT VICTORIES IN OHIO FOR THE ANTI-SALOON LEAGUE.

I wish every one of our readers who is interested in temperance would send for the April number of the *American Issue*. If you live in Ohio it may encourage you to know of the progress our State is making against the open saloon. Just send a postal card to the Anti-saloon Publishing Co., 38 Wesley Block, Columbus, O.; or if you happen to be writing us, just say you would like a sample copy of the paper, and I will see that it gets to you.

---

* Perhaps I ought in fairness to say that, since the above was dictated (some days ago), reports have reached my ears not quite in keeping with what I have just said in regard to both the horse and the boy. Alas for humanity and—*horses!* It reminds me of a favorite text that my good old father used to quote, and sometimes he quoted it rather sadly: "He knoweth our frame; he remembereth that we are dust." Yes, even the best of us are reminded, sooner or later, that we are but dust, after all. But we are told just in the verse above the one I have quoted, "Like as a father pitieth his children, so the Lord pitieth them that fear him."

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

SCABBY POTATOES, ONCE MORE.

E. C. Green, in a late number of the *Rural New-Yorker*, suggests that putting your potatoes in the light and letting them stay several weeks, or a month or two (spread out to the strong light of day, but not to the direct rays of the sun), kills scab fungus as well as toughens the sprouts. He says that last season he planted one bushel of scabby potatoes without having them thus exposed to the light, and the product was badly affected. The rest of the lot were spread out on his barn floor, one deep, and turned occasionally by his little girl so as to let the light strike all sides of the potato. They were spread out as soon as danger from freezing was past, and kept there on the barn-floor till about July 1st. When they were then planted the sprouts were stubby, tough, and dark green. The potatoes were, also, green all over. He cut them to one or two eyes, without breaking off the sprouts, and they started to grow with amazing quickness. He secured a good crop, with not a scabby potato in the lot. While at the experiment station he has also tested potatoes thus treated beside those kept entirely from sprouting in cold storage; but the latter were away behind. As this is substantially the plan pursued for keeping seed potatoes in the island of Jersey, it is not exactly new; but the suggestion that it *cures scab* is new to me, although I have been aware for some time that potatoes planted in July, or even the last of June, were practically free from scab.

This matter is one well worthy of consideration; and if you have some potatoes that you expect to plant a month or two later, I wish you would try the new way mentioned above, and get right about it. If you have not floor space, put some false bottoms in the potato-boxes, half way up, then put a layer of potatoes on the bottom, another on this false bottom, and pile your boxes up one on top of another, where it is as light as it can be without letting the sun strike directly on the potatoes.

COW PEAS AND THEIR CULTURE.

We extract the following sensible article in regard to the matter, from the *Strawberry Culturist* of April 1:

> The cow pea is a decidedly warm-weather plant, requiring about the same temperature as tomato plants or corn. Its chief value is to furnish humus and nitrogen for plant-food. They should be sown in June, in Maryland, in order to mature in September. They are generally sown broadcast about two bushels to the acre. It is a mistake, however, to seed in this manner. They should be sown in drills two and a half or three feet apart, using about one bushel to the acre, care being taken to put the land in good condition. They should be cultivated two or three times between the rows, with cultivator or harrow. If this method is pursued they rarely ever suffer from drouth.
>
> But few people have undertaken to grow the crop in drills, and for that reason have not made the success of it that they looked for. The method usually pursued has been to sow them broadcast and to turn them under with plow, thereby cutting off all source of moisture by capillary attraction; as a result, they get but little growth. We do not think there is any thing in the crop as a mulch. If allowed to remain on the land till they mature there is but little left. If cut green they make a most excellent provender. When used for this purpose the crop should be cut when the pods are forming, and treated like clover.
>
> There is a difference of opinion as to the time the crop should be turned under, if it is grown to improve the soil. Many eminent agriculturists maintain that the ammonia is manufactured and stored at the root of the plant, and the process continues so long as there is circulation in the stalk and the leaves continue to breathe the air. The generally accepted theory, however, is that you save all when you plow under the plant as the pod is forming, and in this case you should treat your land with lime.
>
> The use of these crops—cow peas and scarlet clover—gives promise of greatly improving our agricultural lands, and cheapening products. Nothing has succeeded so well as the cow pea. The great advantage this crop has over crimson clover is that it never fails, if seeded and cultivated in drills. The clover crop is uncertain.

The writer suggests sowing in June. Our experiment station has had good success in drilling in about corn-planting time. By all means put them in drills, and give them some cultivation. The saving in seed will pay for the extra trouble. My experience is that the above statements are all correct, and that their value has not in any way been overdrawn.

SWEET-POTATO CULTURE.—HARVESTING THE CROP.

Concluded from last issue.

This is easily done by plowing them out. I wait till the frost has killed the leaves I never bother cutting the vines after a frost; but I find that, if the potatoes are left in the ground too long, they will not keep so well, and an occasional frosty one spoils the selling qualities. I do not like to wait too long either, on account of rain; the rain does not particularly hurt the keeping qualities, but it causes the potatoes to be muddy, and it is quite a task to wash and prepare them for market. I run between the rows first with a two-horse plow, turning it over on the share so it will cut and pull the vines; then straddle the ridge and turn them out. Follow at once and pull the potatoes out and lay them on the ridge to dry. If a rain should come up before picking up, it will not injure them to leave over night, if there is no indication of frost; but if there is, they must be picked up and covered, then spread out again before storing. Never put them in damp; have them *dry* every time. Handle carefully. I prefer picking and putting into bushel-boxes, and hauling them to the cellar and carefully emptying into bins. Storing the crop is quite different from any other of the farm products, and this has led many to believe it is quite a secret. I prefer a cellar because it is less liable to change in temperature suddenly, and, being under the dwelling, it is handy to reach. If a store-room is above ground it would be well to make it double walled, and pack between with sawdust. Such a room should be kept at a temperature of 45 to 55 degrees; a cellar should be ten degrees higher, and a thermometer kept on the bottom of the cellar.

I make the bins in the cellar a foot from the floor and a foot from the walls, making the bottom and sides tight. On hauling the potatoes from the field they are carefully placed in the bins, and piled up to the ceilings, and the temperature ran up to 90. The potatoes go through a sweating process; and it is necessary to give ventilation for the first two weeks; after that the temperature may be reduced to 60 or 70°, and kept there; but if water should get into the cellar it would be well to run the temperature up to 80°. I have had water standing on my cellar-floor for two winters, and yet the potatoes winter perfectly—even those that happen to fall on the floor.

I prefer a dry cellar; but we can not always control our circumstances, and I mention it here so that one need not be alarmed if water should happen to get into his cellar. However, it would not do for the water to touch the bottom of the bins.

Never ventilate in winter unless you notice moisture gathering on the windows, and never handle the potatoes when going through the sweat.

SELLING THE CROP.

This is not a difficult task, but I deem it best to wait till about the holidays, for two reasons. 1. Quite a number of people imagine that the "shipped" potatoes are the best; 2. The shipped potatoes have been exposed to so much cold weather that they have become somewhat off flavor; hence it does not require much argument to dispose of the home product.

I went to my grocer after storing and keeping my first crop till January, and said, "Ed, I have some choice sweets I should like to have you handle for me."

"Well, Doc, I should like to help you out; but really there isn't any call for home-grown sweets; in fact, I can't give them away"

"I'll bring you in a bushel, anyway, and let you try them; and if there is no sale for them I will take them back."

In a few days I received a card stating that I could bring in another bushel; and it wasn't long before my entire crop was disposed of.

ONE OF MY FAILURES.

Being very busy during one fall, and having heard so many writers claim that frost does not hurt sweet potatoes if stored and sweat out, I concluded to give it a trial. The potatoes were not dug till quite late; the result was, they did not keep well, and a frosty one now and then ruined them for eating.

Shipping potatoes when I began growing plants, I ordered five barrels from Cincinnati, and lost some two barrels in getting them a distance of thirty miles. Last spring I sent potatoes to Iowa that were en route one month, with a loss of only six or eight in a barrel. Before shipping, run the temperature up to eighty or ninety degrees, and one will find that they will carry safely.

VARIETIES.

There are perhaps some seventy varieties of sweet potatoes, but only five or six are cultivated in the North.

1. The *Yellow Jersey* stands at the head.
2. The *Red Jersey*
3. The *yams*, which are cultivated principally for earliness.
4. The *General Grant* (or Gold Coin), that is known by its large round leaf and short vine. While it is a good potato, though in no way superior to the Yellow Jersey, it has the fault of not setting its potatoes close to the plant; and for this reason it can never be plowed out; and the color, white, does not make it a good seller.
5. The Gold Coin Prolific will never produce enough potatoes to make it a profitable variety, although its vine grows erect, something like the Irish potato.

Running after the new vineless potatoes has cost me something like twenty-five dollars. This new craze in sweet potatoes reminds one of the patent-medicine advertisement. Last spring I ordered a peck of "Chinese Thirty Days" from a well-known Eastern firm, paying $2.00 for it; and when they arrived I found it to be the General Grant. I had already more of the potatoes than I knew what to do with in my cellar at the time.

The same thing occurred in ordering "McKinley's Choice" from an Indiana man. I bought these newer varieties, expecting them to be better than our common ones, and thinking I should be repaid in selling the plants; but after testing them I hadn't the heart to deceive my neighbors, and did not try to push their sale. It was claimed for the new varieties that they were easily cultivated; but I find the labor of digging them costs more than the extra labor of cultivating the red and yellow. They can not be plowed out without injuring, as there are so many of the tubers.

In conclusion let me suggest that you cautiously try a *few* new potatoes, remembering that this is a gullible age; and if you get duped at some one's scheming it is perhaps a consolation to know that others are in the "same boat." J. Q. MULFORD.

Lebanon, Ohio.

BERMUDA GRASS—A CAUTION.

On p. 309 Mrs. Harrison calls attention to Bermuda grass for lawns, and the senior editor strongly recommends it. Will you kindly let me sound a few words of warning? There are two species of this grass in Florida, known as Bermuda grass and St. Lucie grass. This last was so named because attention was first called to its great value by some one here on the St. Lucie River—I think by Mr. John McNulty, an ex-employee of Peter Henderson's. Bermuda grass propagates itself by its roots under ground, and, because of that, is exceedingly difficult to be gotten rid of or kept from spreading where it is not wanted. St. Lucie grass increases by runners on top of the ground, something like strawberries, only more prolific, and is, therefore, much easier kept in subjection. It would take a great inducement indeed for me to allow Bermuda grass to get a start on my place.

The differences in appearance and value of the two grasses are almost imperceptible; but for the reason I have given, the St. Lucie grass is being used almost exclusively in this part of the State for lawns, etc.

Stuart, Fla., Apr. 23. O. O. POPPLETON.

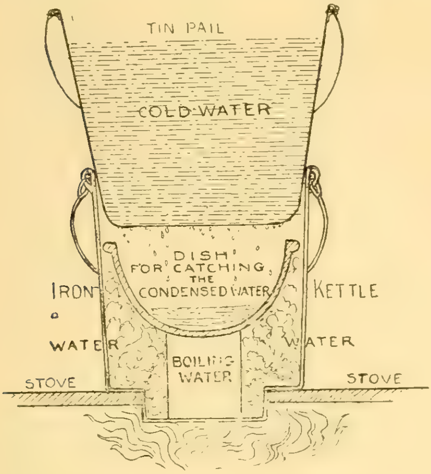
HEALTH NOTES

BY

A. I. ROOT

PURE WATER.

During my childhood, until the age of about twelve, I lived near the soft-water springs of Summit Co., Ohio; and I can not remember that I was ever troubled about water to drink unless away from home. I remember that, even when quite small, I made up a face when asked to drink hard water from certain wells. About the time I have mentioned, father moved to our present locality, and on the old farm there was a well of very hard lime water. They all told me that, when I got used to it, it would agree with me, and that I would like it as well as the old spring water. But I never got used to it. As we had no cistern at that early time I used to set tin pans out in the rain, and, by using all the utensils mother could furnish, I used to get a crockful of pure soft water. This crock I kept covered up and shaded on the north side of the house, as we had no cellar then. Oh how delicious that pure soft water was to me after trying to drink the hard water! Some of the harvest hands laughed at me; and when somebody tipped over my crock with its precious contents I was ready to wage war, even if my puny arms were only pipestems compared with those of other boys of my age. Well, from that time to this I have loved soft water. It now occurs to me that I have mentioned something about it once or twice before. What brings the matter to mind just now is that I have for the past two weeks been enjoying, immensely, *distilled* hot water to drink; and it is more delicious and satisfying than any water I have ever found before. It comes from an apparatus called the "Sanitary still," made by the Cuprigraph Co., 108 North Green St., Chicago. The apparatus cost, heavily nickel-plated, $13. It is set right on top of an ordinary cook-stove, and with almost no attention it furnishes a gallon or more of distilled water a day. The manufacturers say it will produce from three to five gallons; but we have not made it do so much. There has been a good deal of talk about distilled water in our journal before, and I have at different times used it from the steam-pipes in our factory. But the steam from an engine can not be condensed so as to produce nice drinking-water in any way that I know of. The trouble is, the oil used in the cylinder of the engine gets into the steam, and makes the water more or less greasy. You can satisfy yourself of this by the amount of grease found around the exhaust-pipe of any steam-engine. Another thing, I had supposed that rain water caught on a slate roof, and stored in a good clean cistern, was so much like distilled water that few people would notice the difference. This is a mistake. If you taste pure distilled water, and then the best cistern water, you will notice there is a vast difference. Rain water caught direct from the clouds, in clean tin pans or other dishes that will give no taste, is very nearly as good as distilled water. Freshly fallen snow, before it has had time to get full of particles of dust and dirt, furnishes, when melted, perhaps the nearest approach to distilled water of any thing. But rain water, especially in hot weather, very soon becomes more or less contaminated. Distilled water is so different that many people do not like it at first, saying it is too flat and insipid; but when you get used to it, it is the most delicious beverage the world ever produced; and the principal thing that commends it to me is the pure sweetness of the mouth and breath when one drinks only distilled water. I am satisfied it has a very considerable effect in digestion—at least where there is any difficulty or tendency toward indigestion. Pure water is to the physical man what just, pure, and honest truth is to the moral and spiritual man. You can not really appreciate either to its fullest extent until you have had some experience with the spurious article.



HOME-MADE APPARATUS FOR PRODUCING DISTILLED WATER ON A COMMON STOVE.

Do you say, "Bro. Root, it may be an easy matter for you to pay $13 for a Sanitary still, just for the privilege of having distilled water every day, all you want to drink. Is there no cheaper way to get it?"?

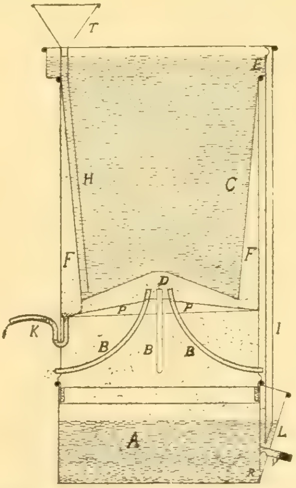
Yes, my friends, there is a cheaper way. If the wash-boiler you use every day has a raised cover, you can produce distilled water very cheaply. Put the boiler on the stove, with just a little water in it. Put the raised cover on upside down. When the water in the boiler begins to boil, the steam will settle on the inside of the cover, and drop off at the apex, which is, in this case, turned downward. Fix a little basin to catch the water as it trickles down, and you will have distilled water. But you will notice that the cover will pretty soon become very hot. Pour some cold water into it every little while, and, when this cold water has become hot, put it down in the bottom, to be boiled, and put some more cold water in its place. If you add a few pieces of ice to the water on top, the steam water will condense on the under side of the cover much faster. In our issue for Oct. 15, 1896, we gave a cut of a home-made apparatus, and I regard the matter as of so much importance that I hereby reproduce it.

DIRECTIONS FOR USE.

The apparatus consists of an iron kettle, not pot, with sides straight at a certain angle; a seamless tin pail, a little more flaring, of such size that it will sit about 3 inches in the kettle, and fit snug all around, so the steam does not escape. I next found a round earthen dish, with scolloped edges, a little smaller than the middle of the kettle, which rests on a tin can. We put water into the kettle up to the bottom of the dish, which holds more than the dish will hold (when it has steamed up against the pail with cold water in it). Into this the water drops from the condensed steam.

You will notice the above is a modification of the boiler and cover. Now, the apparatus furnished by the Cuprigraph Co. is only a further modification of the above—of course, very much more perfect, and withal exceedingly ingenious.

The water is boiled in A, as before. It will not do to let A become empty, therefore there is an opening at L so you can see just how low the water is in the boiler. The chamber C holds the cold water; and as it collects like dew on the outside of C, it runs down and drops from the lower corners into the outside receptacle F. It is finally discharged at K into a glass fruit-jar, or any other suitable vessel. C is to be kept constantly full of cold water. You fill it by pouring water in at the tunnel T. This cold water goes down to the bottom through the pipe H. The cold water will always stay at the bottom because it is heavier. If you pour in enough water at T the hot water will overflow at E into the tube I, and this replenishes A. The tubes B B B are air-tubes to furnish air to aerate the dis-



SANITARY STILL, OR CUPRIGRAPH.

tilled water. About once a week the bottom boiler A should be emptied out and cleansed. Now, it makes very little difference what kind of water you put into this apparatus. You may dip it out of a muddy pool, or it may contain lime, saleratus, or any amount of alkali, but the distilled water at K will be just the same; but, of course, more sediment will collect at A if the water is very impure. Mrs. Root wanted to know if it would be just the same if I were to put a solution of arsenic into the machine. "Why, certainly," said I; "the water would be just as good to drink." But she said she would rather let somebody else try the experiment. Perhaps I should add that the cheapest Sanitary still, made of polished copper, is only $10. If I am correct, pure distilled water has no chemical effect on copper; but, to make assurance doubly sure, the copper is lined with pure block tin inside, so the apparatus should last a lifetime. The Cuprigraph people are offering a nice little book describing the apparatus, telling of the different people who are using their still, etc., all of which will be sent free to all applying.

I feel so sure that a great many people like myself would be greatly benefited by absolutely pure water that I thought I would give the above amount of space to the matter. A great deal of money is paid out for water from various mineral springs; but somebody has said, and I think he is right, that "the *best* mineral water is water containing *no* mineral at all." If you have been troubled with a bad taste in your mouth, and with a longing for water or something to drink that would leave no unpleasant "twang," try distilled water for three or four days, and see if you do not agree with me that it is the kind of water God *intended* we should drink. I believe our medical men agree that a host of diseases, especially those pertaining to the kidneys, are the result of gradual accumulation of minerals or other impurities that come through the water we drink. Typhoid and other fevers, almost all of them, are contracted through organisms contained in water improperly used for drinking-purposes. Occasionally we find soft-water springs coming from pure sand rock where the water is almost as pure as distilled water. If you have such a spring, thank God for it. If, however, you are not satisfied with the water you are obliged to drink, rig up a home-made apparatus such as I have described above, and try it. If pure water, pure air, and pure and wholesome food do not restore you, then perhaps you are excusable in applying to a doctor; but I would try the other things first.

ARNICA, AND LIKE REMEDIES FOR SPRAINS.

In paying a bill at a drugstore a year or so ago I found an item of something like a dollar for arnica. My teamster bought it for a sprain on the leg of one of our horses. For some years I have been trying to discover whether arnica is really any better than or as good as simply hot water. T. B. Terry recently sprained his ankle while traveling. He comments in regard to it in a recent number of the *Practical Farmer* as follows:

> Friends would come in and ask why I did not put on this and that. One day I asked our family physician, in whom I had confidence, if there wasn't something that could be put on that would hasten the healing a little, and he replied, "No, I am sorry to say there is nothing known to science that will do any good. We must wait for Nature, and do nothing to hinder her." This reminds me of what Dr. A. W. Bitting told us at Indiana institutes about taking care of the wounds of an animal. He said, "Wash clean in sterilized water; then bind up in new clean cheese-capping. To sterilize the water, boil it and allow it to cool before using. Use no old rags nor ordinary water. Nothing you can put on will do any good, such as binding on pork, fish-worms, etc." How often we doctor ourselves or our stock, and we get well, and we give the credit to our work, while Nature did all the healing, and very likely we hindered her some!

Here is something else that I clipped from a paper. It may have a bearing on this matter of buying medicines:

> Mrs. J. C. Ayer, widow of the noted patent medicine man, died in Paris last week. She had lived in Paris ten years, "the richest woman in the world." Her wealth was estimated at thirty millions of dollars, and her annual income was two millions. It all came from poor sick mortals. She loved display, and her establishment was the grandest in Paris.

Humbugs and Swindles.

Mr. A. I. Root:—I send you by this mail a little paper published in your State by a couple of men named Bain. I wonder if one of these is our old friend Bain. I consider the thing a batch of lies, and would like your opinion of it in GLEANINGS.

Napton, Mo. JAS. T. SHACKELFORD, P. M.

The paper published at New Concord, O., is called the *Money Maker*, and its principal business seems to be to puff egg-preservatives, fruit-preservatives, hair-restoratives, and other things to make money. A great part of the articles published in the paper are from people who tell how they made "lots of money" buying these new-fangled preparations of the editors. Here is a sample of the way they start out:

> A GIRL'S GRIT.
>
> EDITORS MONEY MAKER:—I want to thank you for the article you published last month about preserving fruit by the cold process. I was out of work, and did not know what in the world to do; but after reading your paper I borrowed a dollar, and sent for a sample of fruit, and 15 directions for preserving it, and started out to sell it, it being my first attempt to sell any thing. I gave a taste of the fruit at every house I went to, and I did not find a person but said it was the nicest fruit he had ever tasted. I sold four recipes in the forenoon, seven in the afternoon, and the other four in an hour that evening, and got a dollar each for them; and to every one who bought a recipe, I sold a package of salyx, with which to put the fruit up, and made 50 cents on each package, so on that day's work I made $21 above my expenses. This may not seem much to those who are used to having lots of money. I then sent for 25 more directions, and have just sold the last one of them, and a package of salyx with each one; so I made $30 clear money on that lot in less than two days. I am going to push right along at this till I get money enough to start up in the poultry business nicely. All the money I can make this spring I am going to invest in eggs, and preserve them by the algretta method. I thank you again for your very valuable paper, and inclose you $2 for it and a package of per-algretta. MISS MARY A. BURNS.

Of course, they do not tell where Miss Mary Burns lives, nor any of the rest of the contributors, nor the address of those who contribute similar articles. Preserving fruit by the cold process is such an old exposed humbug that I did not suppose anybody could be duped by it now. Look out for this sort of advertising, *no matter in what paper you see it.*

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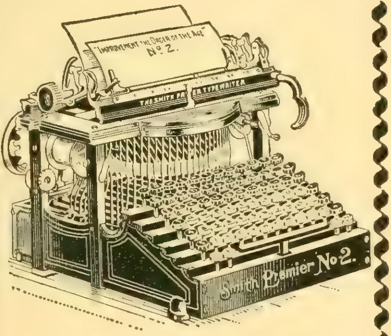
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Meets every requirement of a critical typewriter-using public. It is the Leader in Improvements, the most durable machine made, and daily in thousands of offices all over the world continues to prove itself to be THE BEST VALUE TYPEWRITER.
Ask for Art Catalogue.

Smith Premier Typewriter Co.,
348 Superior St., Cleveland, O.

In writing, mention GLEANINGS.

Young, warranted, either three-band or golden queens, 75c; 6 for $3.75; doz., $7.25. Reared from select working colonies. Circular free.
J. B. CASE, Port Orange, Fla.

TO ONE AND ALL!

QUEENS, strictly five-band or Golden Beauties. Untested, 50 cents. Tested, $1.00.
TERRAL BROS., Lampasas, Texas.

In writing, mention Gleanings.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.

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"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.
WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

In writing, mention Gleanings.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.
M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

In writing, mention GLEANINGS.

QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.
W. H. LAWS, Lavaca Seb. Co., Ark.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

ROOT'S GOODS

Shipped from Jackson, Mich., at Root's prices. Send for list. W. D. SOPER, Box 565, Jackson, Mich.

No cheap Queens to sell; but the best.

Golden 5 band, or 3 band from imported mother. Untested, 75 cts.; tested, $1.00.
L. BEAUCHAMP, Box 613 San Antonio, Texas.

Write Quick for circular of Cole's Garden-plow. Best in use.
G. W. COLE, - - - Canton, Ill.

EGGS FROM prize-winners—Barred and White P. Rocks, Light Brahmas, Single-comb Brown, White, and Buff Leghorns, and Black Minorcas, 13 for $1.00; 30 for $2.00. Send for circular.
CHAS. RUE, Minerva, Ohio.

SPECIAL NOTICES BY BUSINESS MANAGER

COMB FOUNDATION ADVANCED.

From April 20, the date of this circular, till further notice, or until price of wax declines again, the price of comb foundation will be 3 cts. per lb. higher than the prices quoted on page 14 of catalogs bearing date before May 1, 1898. Should wax advance still further this season, the price of foundation will advance with it. We do not look for any further advance. Wholesale prices are advanced the same as retail—3c per lb.

BEESWAX WANTED.

We are using over two tons of beeswax every week in the manufacture of comb foundation, and for the next month we will pay 28 cts. per lb. cash, 30 cts. in trade, for average wax delivered here. We can not guarantee this price longer than June 1. If you have any to ship we would advise you to get it off to us promptly. Be sure your name is on the package, and that it is securely packed. Send word by mail how many pounds you ship, and send railroad shipping-receipt.

FILLING OF ORDERS DELAYED.

The demands upon us for goods this year are more than double those of last year. Last season we began running night and day about the last of March, and kept it up for four months. This year we put on a night force March 1, and have added more machinery and men till our engines are overloaded and every bit of available room occupied. In spite of all our efforts, the orders come in faster than we can fill them. We have ordered eight carloads of goods from other manufacturers to help us out, and would order more if they could supply them. We know of orders for two cars going to other factories, which we had offered to us first and could not accept. We have not for weeks sent out any wholesale prices, and have turned away lots of business that we might have had if we were prepared for it. Some orders are delayed a month, and a few as long as six weeks, while many, for little items of which we have a surplus, and can fill without robbing the older orders, we ship within a few days to two weeks. We are as much disappointed as any of our customers, that we are, by force of circumstances, compelled to delay the shipping of orders so long. We are laying plans for greatly enlarging our works before another season as well as to make up more stock ahead during the dull season, and at the same time we can not forbear to congratulate those who were forehanded enough to foresee their needs and order in the fall and winter, when we have plenty of time and stock to fill orders, and you have plenty of time to prepare the supplies ready for use. Other manufacturers are also crowded, and more or less behind on orders, though they may not be as badly behind as we are. In any case, whether you send your order to us or elsewhere, you must expect more or less delay Our branch offices and wholesale dealers have more or less available stock. *The above refers mainly to bee-supplies; other goods, mostly, go promptly.*

BARELY HOLDING OUR OWN.

On April 20th we sent out to all our agents and dealers the above bulletin, advancing price of foundation 3 cts. per pound wholesale and retail, and offering 28 cts. cash, 30 trade, for average wax delivered here, and telling of the delay to orders. These same slips have been inclosed in all catalogs mailed since April 20, and inclosed with all letters going out. We have thereby discouraged a good many from sending their orders. Notwithstanding this, the orders received run up to over one hundred a day. We have filled a great many orders received in April for such items as we could ship without robbing older orders. We have very few orders received before April 1, except a few carloads which we expect to ship during the next two or three weeks. We have had one million sections from one manufacturer, half of which went to Syracuse, and we expect another million during this month from the same place. Of another firm we have ordered five cars of hives and sections, and expect to order several cars more. We have shipped from here twenty carloads more this year than we had shipped up to the same date last year, or fifty-three cars in all; besides, the increase on less than carload shipments has been fully as great or greater. Considering the business turned away, and what we have placed elsewhere, the demand upon us this year is more than double that of last year. The demand for hives is something enormous, and it is orders for hives and special goods that have to be made to order that we are most behind on.

CARLOAD SHIPMENTS.

We had hoped, during the past month, to ship four full carloads each week, besides filling smaller orders, but we have not been able to accomplish it. The smaller orders have aggregated five to six carloads in weight each week, and twelve full carloads is all we have been able to get out of bee-supplies besides two cars of other goods. We have shipped two carloads to London, Eng , and a carload of miscellaneous export orders; a large car to Jos. Nysewander, Des Moines, Iowa, and another to W. S. Pouder, Indianapolis, Ind. A large car with enough overflow to make two carloads has gone to Syracuse, and another large car to Philadelphia branches. As I write we are loading two cars for Chicago branch. We have shipped a car to A. F. McAdams, Columbus Grove, Ohio, where our patrons in the western part of the State may be supplied. We are also preparing a carload for Reno, Nev., a large part of which goes on to Inyo Co., Cal. We still have carload orders ahead of us unfilled for five cars for export and ten cars to different points in this country, all we shall be able to get off this month and keep pace with smaller orders coming in.

CLEAN, BRIGHT, SECOND-HAND 60-LB. CANS.

A party in Holliday's Cove, W. Va., who handles large quantities of extracted honey, has quite an accumulation of empty sixty-pound cans, two in a box, which he offers for sale cheap. He has divided them into two classes—cans that are bright inside and out, and those which are bright and clean inside, but slightly rusted outside. We offer these cans as they are, in lots of ten boxes or more, at the following prices: 30 cts. a box for those bright inside and out, or 20 cts. a box for those somewhat rusted outside. Shipments made direct from Holliday's Cove, W. Va. (near Pittsburg, Pa.). Orders must be sent here.

ODD-SIZED SECTIONS

We have the following odd sizes in sections on hand. Should you see any in this list that you can use, write us.

1000 5x5x1⅞ open top No. 1.
500 5¼x5x1⅞ open top No. 1.
4000 5¼x5¼x1⅞ open top No. 1.
4000 6¼x5¼x1¾ open top No. 2.
9000 6¼x5¼x2 open top No. 2.
2000 6¼x5¼x1⅞ open top No. 1.
350 6x5x1⅞ open top No. 1.
500 7x5x2 open top No. 1.
4500 3⅞x5x1⅞ open corner No. 1.
1500 4¼x5⅝x1 15/16 open top No. 1.
1500 5⅝x4¼x1¾ open top No. 1.
500 5⅝x4¼x1 15/16 closed top No. 1.
500 4¼x6½x2 open top No. 1.

In regular sections we have an over-supply of 4¼x4¼x1¾ and 7-to-foot, No 1 and 2 style; of No. 2 grade in 4¼x1½ plain; and 3⅝x5x1½.

Special Notices by A. I. Root.

THE LEGGETT POWDER-GUNS FOR DRY PARIS GREEN.

The above firm have this season got out a new machine that they call the Standard duster—price only $4.50. It dusts two rows of potatoes at once, and will probably take the place of their higher-priced guns of last year. We can furnish them if desired. The Hotchkiss powder-gun will also be $4.50 instead of $5.00 as it is in our price list.

VEGETABLE-PLANTS READY AT THIS WRITING.

We have a fine lot of celery-plants of all kinds; also Snowball cauliflower; a fair supply of onion-plants; but tomato and cabbage plants are pretty well bought up or engaged. Sweet-potato plants we are just beginning to send out. As strawberry-plants are now pretty much all budded ready to blossom, I would not advise ordering many as late as this. We expect to have new potted plants during this month.

ONION SETS.

At present writing we have only about half a bushel left of Prizetaker onion-sets and a few white ones.

We have also two or three bushels of large-sized Prizetaker; and even at this late date they are in nice order, not sprouted at all. The regular Prizetakers will be $3.50 per bushel. The large sizes we will close out at $1.50 per bushel. These latter will probably make good onions if you pull off the seed-stalks as fast as they appear. We have also three or four bushels of White Multiplier onions, medium sizes, which we offer at $1.50 per bushel to close them out. We have three or four quarts of the top onion-sets, mentioned several times heretofore, which we still offer at 10 cts per pint. If wanted by mail, add at the rate of 10 cts. per quart for postage on all onion-sets.

STRAWBERRY-PLANTS FOR SALE MAY 1ST.

Our Marshalls, under glass, are now giving us beautiful berries every day, and I believe I should put the Marshall ahead of any thing else I have tried for forcing. You can get them two or three weeks ahead by the use of sashes, no bottom heat at all. We have Earliest with runners potted in jadoo fiber, and shall have new potted plants ready to send out in about a week. The Darling will come along a little later. New potted plants put out in May might give quite a crop of fruit this present season; but, of course, we can tell better about it after we have tried it. At present, the Earliest does not produce nearly as much fruit under glass as the Marshall. We are pushing all of our choice berries to get potted plants extra early—not only those we have mentioned, but also Carrie, Nick Ohmer, Margaret, Brandywine, and William Belt.

SEED POTATOES YET UNSOLD.

There has been a very great call for early and extra-early seed potatoes. We have nothing left at present in any quantity except Freemans grown by T. B. Terry, 165 bushels, all in excellent condition; and, in fact, there is hardly a potato in our cellar that is sprouted enough to notice it. We have succeeded, during the past winter, by closing the cellar nights and opening it during the day, in keeping potatoes better than we ever did before. We offer the above Freemans at $1.00 per bushel or $2.50 a barrel. We have 15 bushels of Carman No. 1, and 8 bushels of Carman No. 3, at $1.25 per bushel, or $3.00 per barrel. We have also 16 bushels of Monroe Seedlings, 36 bushels of Sir William, 25 bushels of Rural New Yorker, at $1.00 per bushel or $2.50 per barrel. We have 55 bushels of Bovee at $2.00 a bushel or $5.00 a barrel. If these do not sell I shall plant them all myself. White Bliss Triumph is all gone, and I do not know where I can get any more. But I have succeeded in getting 10 barrels from away down in Maine of the Red Bliss Triumph. These 10 barrels are to come to me unassorted, and they probably will be on hand before this meets your eye. This Red Triumph, as you may know, is the Bermuda potato. There has always been a great demand for Triumphs for seed ever since the potato was introduced, and somebody ought to raise a good lot specially for seed. For this purpose they are better planted late than early, and my 10 barrels are to be all planted to grow seed for next year. If you want some of them, however, I will divide with you. After paying the freight I presume I shall be obliged to charge about $1.50 a bushel or $3.50 a barrel, and this price is for potatoes unassorted, including both large and small.

Perhaps you might like to know what kinds of potatoes are going to be wanted next year. Well, just now there is an unsupplied demand for Manum's Enormous, New Queen, Burpee's Extra Early, Early Ohio, and Thoroughbred. If any of our readers have any of the above for sale I wish they would let me know how many they have and what they will take for them. The principal part of our potato-planting will be done in June, and considerable—that is, if we can find seed in even tolerable order—in July. See what is said about scabby potatoes on page 363.

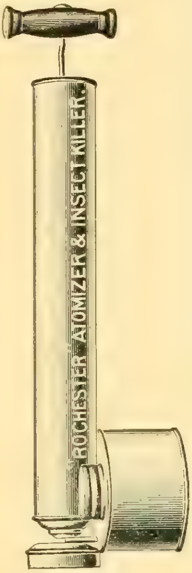
"CASH PRIZES" FOR "GOOD GUESSERS."

The latest thing along this line is a picture of twelve different kinds of farm and garden seeds. Five hundred dollars in cash is offered to the lucky chap who guesses the names of *all* the seeds; but if you can not guess all, but succeed in guessing correctly on six, you get a $4.00 prize by return mail. To get this $4.00 prize you have a very good picture of a bean, a potato, a grain of corn, buckwheat, oats, and beet. Besides the pictures, which are very fair, the first letter of each seed is placed by the picture—B for bean, P for potato, etc. Now, any man, woman, or child, must be an idiot indeed not to guess these six at the very first glance; and I suppose it is "idiots" who keep the thing going, for you have to pay 25 cents cash down before you can "enter the contest" The advertising agent who sends it out is evidently a little suspicious, for he says in his letter:

"This advertisement has been 'passed on' by the authorities at Washington; and as Mr. —— is postmaster at his town he knows what he is talking about when he says that the department states that the ad. is all right, and should not be refused the privilege of the mails. We simply mention this, as one or two papers have questioned their being allowed to run the advertisement."

We hereby call the authorities at Washington to order. No matter if the seedsman *is* a postmaster, his game is exactly the same, but in a different form, that the Postoffice Department has recently ruled out. I allude to the "missing-letter" advertisements. But even if the authorities do not immediately reject such an advertisement, all honest people should give it, and the man who pushes it, a wide berth.

A NEW SPRAY-PUMP.



One evening, when I was making my rounds among the night men, one of them said he wanted to call my attention to the best apparatus for spraying potatoes with Paris green ever invented. I told him about our dry-powder guns; but he said that, if I would take and use his little spraying-machine that cost only a dollar, I would give up that we have something ahead of even the dry Paris green; and then he brought me the little machine, something like the cut.

This is on the principle of the bicycle-pumps. Its extreme length is about 18 inches, and it holds a good big pint of water, but weighs only a pound. The spray produced is so extremely fine that it looks like steam from the nose of a tea-kettle; and, no matter how strong you have the solution, this fine spray never injures the potatoes. For instance, you can put a teaspoonful of Paris green into the can, or you can put in ten teaspoonfuls. Just fill it up with water and go ahead. When you go out to do an acre of potatoes, carry along a bucket of water and a quarter or half a pound of Paris green, according to how bad the bugs are. Have your Paris green wrapped up in papers say of a good teaspoonful each. Do the papers up as a doctor wraps up his medicines. When you want to fill your machine, put a paperful into the can, then dip the can into a pail of water until it is full Screw on the cap, and go ahead with your spraying. You see, the plan is a sort of compromise between the dry powder and half a barrel of water. All who have used the dry powder will notice that it works rather better if applied to the potato-tops when the dew is on. Now, this small quantity of water makes an artificial dew. You give one stroke of the pump at every hill of potatoes, and it is distributed nicely all over the leaves. My friend who gave me the gun said he could go over an acre in two hours; and if the bugs were not very bad, two quarts of water and ¼ lb. Paris green would be enough.

By purchasing the machines by the quantity we are enabled to furnish them at only 75 cts. each; 3 for $2; 6 for $3 50. If wanted by mail, add 25 cts. extra for postage and packing. I am a little afraid the pumps would be liable to be bruised if sent by mail; but we will try sending them that way when our friends are a good way off from an express office. Full instructions for use are pasted on each machine. They will answer for spraying melon-vines, and, in short, almost every thing any spray-pump is used for; and it will work with all sorts of insecticides. You can use them for spraying fruit-trees if the trees are small, or if you get up into the tree with a step-ladder. Where you have a good many trees, or where they are very large, of course it will pay you to have a more expensive apparatus.

Ours is the Most Complete Department Nursery in the U. S. Can supply all your wants from **Flower and Vegetable Seeds** to **Street Trees** at low rates. We publish one of the leading Seed, Plant and Tree Catalogues issued, which will be mailed **free.** Send for it now, it will save you money. Try us, can refer you to customers in every state and territory in the Union. Forty-three years of square dealing has made us patrons and friends far and near. Have hundreds of carloads of

FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS.

We send by **mail postpaid, Seeds, Bulbs, Plants, Roses, Small Trees, Etc.** Safe arrival and satisfaction guaranteed; larger by express or freight. 44th year. 32 greenhouses. 1000 acres.

THE STORRS & HARRISON CO., Box 556, Painesville, O.

When writing advertisers please mention GLEANINGS.

BEE-SUPPLIES.

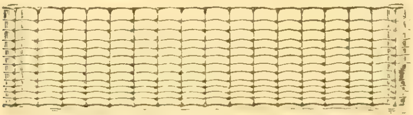
We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture Tanks of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

In writing advertisers, please mention Gleanings.



Comes and Goes,

but still is a "**staver.**" Come summer, come winter, **The Page** abides unchanged. We've told you over and again **it's the coil that does it.** That coil is patented by the

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

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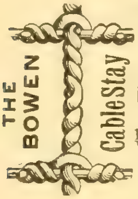

Machine $10

TO BUILD THE **STRONGEST** AND **BEST** WIRE FENCE.

16 to 24 Cents per Rod.

No farm rights, royalties or patent stays to buy. AGENTS WANTED. Write for circular.

The Bowen Cable Stay Fence Co.
NORWALK, OHIO, U. S. A.

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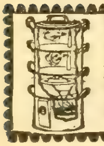

WANT MONEY?

Easy to make selling **BEVERIDGE'S Automatic Cooker.** Practical and satisfactory. No scorching, no odor. Saves labor and fuel and fits any stove. **Good pay to agents** of either sex. 2385 sold in one town. Write (P. O. 963), **BEVERIDGE MFG. CO., Baltimore, Md.**

In writing, mention Gleanings.

1898

High Grade BICYCLES

for Men, Women, Girls & Boys. Complete line. *All brand new models.*

$75 'Oakwood' for $32.50
$60 'Arlington' " $24.50
Others at $15, $17 and $20
Juveniles $7.00 to $12.50

No Money in Advance.
WRITE TODAY for SPECIAL OFFER.

Shipped anywhere C.O.D. with privilege to examine. Buy direct from manufacturers, save agents & dealers profits

Large Illus. Catalogue Free. CASH BUYERS' UNION, 162 W. VanBuren Street, B-845, Chicago, Ills.

In writing advertisers, mention GLEANINGS.

SPRAYING

with our new

KEROSENE Sprayers

is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.
West'n Ag'ts, Henion & Hubbell, Chicago

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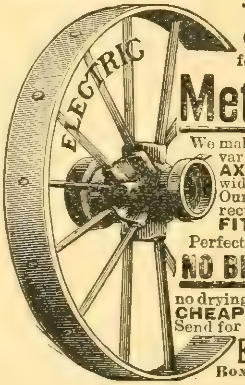

THE WHEEL OF TIME
for all time is the....

Metal Wheel

We make them in all sizes and varieties, **TO FIT ANY AXLE.** Any height, any width of tire you may want. Our wheels are either direct or stagger spoke. Can **FIT YOUR WAGON,** Perfectly without change....

NO BREAKING DOWN

no drying out, no resetting tires **CHEAP** because they endure. Send for catalogue and prices.

Electric Wheel Co.
Box 95 Quincy, Ills.

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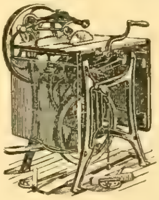

One Man with the UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei

Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

In writing, mention GLEANINGS.

QUEENS. Untested, either 3 or 5 banded, 75c each. My bees are as good as any in this country.
DANIEL WURTH, Falmouth, Rush Co., Ind.

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Honey Column.

CITY MARKETS.

BUFFALO.—Fancy honey, 10½@11; A No. 1, 10@10½; No. 1, 9@10; No. 2, 7@8; No. 3, 6@6½; buckwheat, 5@6; strained, 5@6; extracted, in jelly-tumblers, 80@90 per dozen; beeswax, 27@28 The market is quite active for this time of the year—noticeably more on medium-grade goods. W. C. TOWNSEND,
May 5. Buffalo, N. Y.

NEW YORK.—Trade in honey fairly active. Fancy white and buckwheat comb find quite ready sale with us. Trade in Southern and California extracted has been very good the past few weeks. Beeswax in demand. We quote our market as follows: Comb honey, fancy white, 11@12; fair white, 9@10; buckwheat, 6½@7; extracted honey, California water white, 6½; California white, 6; California light amber, 5½; Southern extracted, 52½@55 per gal. New York State extracted not much demand at present. Beeswax, 27½@28½. Write us for shipping directions.
FRANCIS H. LEGGETT & CO.,
May 6. Franklin and Varick Sts., New York.

CLEVELAND.—We quote our honey market as follows: Fancy white, 12@12½; No. 1 white, 11; No. 1 amber, 9@10; buckwheat, 8; white extracted, 6; amber, 4@5. The demand for honey of all kinds is very light, consequently it is moving very slowly.
A. B. WILLIAMS & CO.,
May 11. 80-82 Broadway, Cleveland, Ohio.

PHILADELPHIA.—Some poorer grades, as No. 1, selling at 10c; No. 2, 8@9; extracted dark, 4¼; amber, 5; light, 5½; beeswax active at 28. Honey market very dull. We are producers of honey—do not sell on commission. WM. A. SELSER,
May 10. 10 Vine St., Philadelphia, Pa.

COLUMBUS.—Fancy white, 12; A No. 1, 11; No. 1, 10; 2, 9; amber, 7½@8; buckwheat, 6@6½.
THE COLUMBUS COMMISSION & STORAGE CO.,
May 10. 409-413 N. High St., Columbus, O.

BOSTON.—Honey has been in good demand, and stock is well cleaned up. We quote fancy white, in 1-lb. cartons, 13; No. 1 white, in glass-front cases, 11@12; No. 2 white, in glass-front cases, 9@10; extracted white, 6@7; light amber, 5@6.
BLAKE, SCOTT & LEE,
May 10. Boston, Mass

KANSAS CITY.—The crop of '97 comb honey in this market is about all sold. We are ready for the new crop. The supply of extracted is fair; demand light We think shipments of new comb honey would bring a fair price, probably 12c. C. C. CLEMONS & CO.
May 10. Kansas City, Mo

CHICAGO.—Fancy white comb, 10¾@11¼; A No. 1, 10@10½; No. 1, 9@10; amber, 8@9; water-white extracted, 5¼@6; light amber, 5@5¼; amber, 4½@5. Market steady. AMERICAN BROKERAGE CO.,
May 11. Chicago, Ill.

DETROIT.—There are no changes since last quotations, and very little desirable honey left. Sales are so few that it is difficult to quote. Beeswax in good demand at 27@28.
May 10. M. H. HUNT, Bell Branch, Mich.

CHICAGO.—There is very little honey on sale. The market is cleaned up on comb with exception of odd lots of amber to dark. We are in fine shape for small lots that producers may have of early comb from the new crop. Beeswax scarce at 30c.
R. A. BURNETT & CO.,
May 10. 163 South Water St., Chicago, Ill.

ST. LOUIS.—The season for selling honey is about over. To make sales we have to take low prices. White comb we are offering at 8@9; No. 2 white comb, 7@7½; amber, 5½@6; dark, 4@5. We sold extracted white, this week, in cans, at 4; light amber, 4; white, in barrels, 3½@3¾; dark, 3; beeswax, 27@27½.
WESTCOTT COM. CO.
May 10. St. Louis, Mo.

MINNEAPOLIS.—Market remains unchanged. Fairly good demand. Could place a round lot of extracted here if strictly fancy white clover.
S. H. HALL & CO.,
May 10. Minneapolis, Minn.

CINCINNATI.—Demand is slow for all kinds of honey, especially for comb honey. Prices for the best white comb honey are nominal at 10@13; extracted brings 3½@6, according to quality. There is a good demand for beeswax at 25@28 for good to choice yellow, on arrival. CHAS. F. MUTH & SON,
May 12. Cincinnati, O.

DENVER.—We are selling best grade of comb honey in our cartons at 11½. There is a cheaper grade on the market, but we do not care to handle it. We are having splendid demand for white extracted honey. We could handle quite a quantity. If parties would send us samples of No. 1 white we will buy same. Can quote prices now at 6c. There is a good demand for beeswax at 25c for choice yellow.
R. K. & J. C. FRISBEE,
May 11. Lock Box 1014, Denver, Col.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS,** the result of 19 years of careful breeding. Warranted queens, $1.00 each; 3 for $2.50; per dozen, $9.00; select warranted, $1.25; select tested breeder, $2.50; strong 3-frame nucleus, with select tested breeder, $4.00. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

FINE ITALIAN QUEENS.

Best honey-gathering strain. All purely mated. 70c, or 3 for $2.00. No black bees here, and no disease.

W. C. GATHRIGHT, Dona Ana, N. Mex.
Money-order office, Las Cruces, N. M.

TWO SPECIAL OFFERS.

As explained in former ads., publishers can afford to put forth extra efforts in securing *new* subscribers, as the majority remain, once they become subscribers to a *good* journal. It is from this point of view that I make the following offers :

OFFER NO. 1.

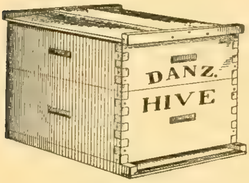
To any one not a subscriber to the Review who will send me $3.00 I will send the Review for 1898, and 1000 strictly first class snow-white one-piece sections. After accepting this offer, if any one wishes to buy more sections I will furnish them at the following prices: 1000 for $2.75: 2000 for $5.25; 3000 for $7.50; 5000 for $12.00. Sections will be shipped from any of the following points : Flint, Mich.; Chicago, Ill.; Medina, Ohio; Jamestown, N. Y.; Higginsville, Mo., or Omaha, Neb.

OFFER NO. 2.

To any one not a subscriber to the Review, who will send me $1 50, I will send the Review one year and a fine TESTED Italian queen. Purchasers may have either the bright golden strain, or the dark leather-colored reared from imported mothers. After accepting this offer, if any one wishes more queens they will be furnished at the following prices: Single queen 90cts.; 3 for $2.65; 6 for $5.00; 12 or more at 75 cts. each. Orders will be filled in rotation, and safe arrival guaranteed.

Unless otherwise ordered, subscriptions will begin with the Jan. issue ; and the Dec., 1897, number will also be sent free. If you are not acquainted with the Review, and wish to see it before subscribing, send ten cents for three late but different issues, and the ten cents may apply on any subscription sent in during 1898.

W. Z. HUTCHINSON, Flint, Mich.



$100

Given as Bounties to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,** or F. DANZENBAKER, Box 466, Washington, D. C.

In writing, mention GLEANINGS.

Root's Goods *NEAR HOME AT CATALOG PRICES.* **Prothero & Arnold, Du Bois, Pa.**

Philadelphia Branch of

THE A. I. ROOT CO.,

10 Vine Street.

Our plain sections, fences, improved smokers, etc. A full line of everything of the latest pattern at lowest factory prices.

3-fr. (Hoff.) nuclei, $2.75 ; 8-fr. full colonies, $6.00. From as good strain of Italians as ever gathered honey.

In writing, mention Gleanings.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

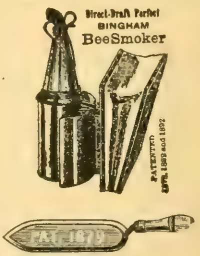
Smoke Engine (largest smoker made.)	4-inch	stove.	Doz. $13.00 ;	each, by mail, $1.50
Doctor	3½-in.	"	" 9.00 ;	" 1.10
Conqueror	3-in.	"	" 6.50 ;	" 1.00
Large	2½-in.	"	" 5.00 ;	" .90
Plain	2-in.	"	" 4.75 ;	" .70
Little Wonder (wt. 10 oz.)	2-in.	"	" 4.50 ;	" .60
Honey-knife			" 6.00 ;	" .80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR ; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

T. F. BINGHAM, Farwell, Michigan.

In writing advertisers, mention GLEANINGS.

DID YOU SEE IT?

See What?

Why, that full-page advertisement of the *American Bee Journal*, on page 289 of GLEANINGS for April 15? That offer is still open. Better turn back to it, and read it. It will pay you. Send your address for *free* sample copy of the old weekly *American Bee Journal*, and also get information about our fine bee-book offer.

GEO. W. YORK, = = 118 Michigan St., Chicago, Ill.

GLEANINGS IN BEE CULTURE
A Journal Devoted To Bees and Honey and Home Interests.
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio.

Vol. XXVI. MAY 10, 1898. No. 10.

STRAY STRAWS FROM DR C. C. MILLER

CURIOUS how we sometimes get a thing in a wrong light. Now there's Doolittle, whose honesty I'd stake against any one of his opponents; but he got the wrong perspective on that veneering business, sure.

YOUR MEASUREMENT, Mr. Editor, agrees with mine. I have never found less than ¼ inch space between two faces of comb honey, or between a face and a separator. [Yes, I feel quite sure ¼ inch is correct. I am wondering how Bro. Crane, who is usually so accurate, was a little off here.—ED.]

ROUGHNESS in a section-cleaner is hardly objectionable *if it has speed enough*. How would something like a horseradish-grater surface do? [A grater would be too rough, I am thinking. Suppose, however, you take a piece of tin and punch some holes in it, and then try a section-box on it.—ED.]

IN THE CASE OF A. I. Root vs. Sawdust Boy, p. 362, the jury has rendered a verdict in favor of S. B., and against A. I. R. The boy gave truthful answer to the question asked, and then obeyed the simple command of his chief. The said A. I. R. is the one that ought to have *found out* "consequences" before giving a direct command. Said A. I. R. to pay all costs.

"THE LARVA IS FED SIX DAYS," says Doolittle, p. 352. That used to be the time when it took 17 or 18 days for a queen to mature. Cowan says the queen or worker larva is fed 5 days and the drone 6. See Guide Book, p. 10. Dadant's Langstroth, p. 88, gives growth of larva for queen, 5½ days; worker, 6; drone, 6½. Cheshire, Vol. 1, p. 20, says, "after about four days' feeding . . . no more food is supplied." [I suspect that each one of them is all right, for the reason that the time may vary all the way from 5 to 6 days.—ED.]

B. F. ONDERDONK says "West India sugar" is the true cane sugar of commerce, called raw sugar. "Is mixed with beet sugar, refined, losing half its sweetness when it becomes granulated sugar." Now, I'm all stirred up to know more. Is it the mixing with beet, or is it the refining that loses the sweetness? [We have had sent to us samples of cane sugar that were known to be such, and samples of beet, and I doubt whether anybody but a chemist could tell the difference by the taste; but somewhere I have seen it stated that one is as sweet as the other—perhaps not, though.—ED.]

NO IMPROPRIETY in my sticking on "Ed." whenever I like, says a footnote, page 335. Good! Just what I've been wanting this long time. So, here goes:

The T super is very much superior to what is called a section-holder.—ED.

Unfinished sections should be leveled down just enough to remove the soiled parts. Any thing more than this is folly.—ED.

[A certain editor down in Ohio says Dr. Miller is off on the T-super question, but all right on the unfinished-section matter.—ED. IN OHIO.]

I'LL TELL YOU, Mr. Editor, why I don't prove my "individual faith" in long tongues by my individual works. Just because I can't get you to get me a proper glossometer. [Glossometer! why, doctor, you can have the one that Martin made for us years ago. But do you know of a good machine for measuring bees' tongues? I suspect that as good a thing as can be devised is simply a wire cloth set at different distances from a surface of honey. Let the bees reach through, then raise the wire cloth to a point where they can just reach it. Measure the distance, and you have the length of the bees' tongues. What better glossometer do you want?—ED.]

"ARE YOU SURE, doctor—real sure—that fire is absolutely necessary in your cellar under any circumstances?" asks the editor, p. 336. I think I'm sure. I spent the winter of 1872–'3 in Cincinnati, leaving fifty colonies in the cellar at Marengo without fire. I think 4 of the 50 survived, and I think there would have been no such loss with fire. When the temperature in cellar stays for weeks below 37° I think fire necessary, and a benefit if below 44°. I've hunted and hunted, but can't find about Harry Lathrop's dugout. What was the temperature, and for how long? [May be you are right; but somehow, when the other fellows get along without fire, at an equally low temperature, I have a sort of feeling that you could. With regard to Lathrop's dugout, I would state that I read the manuscript, and was under the impression that it was published; but the boss printer says it is still "on the hook;" but it will be printed in this issue. But the fact of the water being in the cellar was mentioned, nevertheless.—Ed.]

A. B. Anthony asks whether all our bees may not properly be termed "wild." I don't like to risk a very positive answer, but I should think not. While I don't control any single bee as I do a horse, taking a colony as a whole it is decidedly under control, or, if you please, domesticated. If a swarm from my apiary gets away from me and goes into a hollow tree, it's wild. If you find it and take it home in a hive, it's tame. If it deserts your hive and goes to the woods, it's wild. It might be an important matter sometimes, legally, to know whether bees are wild or tame. I don't believe you can make me pay taxes on wild animals.

D. W. Heise's question, p. 344, suggests that the Long-Idea hive is little known in this country. It is, however, well known in Europe, and in extensive use for years. Such hives are called "lager" hives in Germany, and include the Thor-stock and the celebrated "Bogenstuelper" of Gravenhorst. The Layens hive in France is also in the same class. But somehow the idea doesn't flourish on American soil. [I have been wondering, doctor, whether the value of the Long-Idea hive rested, not in the long idea itself, but in the bigness of the colony. If that is the case, then I am a Long-Idea man; but instead of having the "long" spread out horizontally, I would have it spread out perpendicularly.—Ed.]

A bright idea gives G. M. Doolittle in *American Bee Journal.* In cutting foundation, have a very thin knife. Then, instead of heating the knife otherwise, make several rapid strokes in cutting, and the friction will do the heating. Thanks, Bro. D. [My! oh, my! I supposed everybody knew that; but how often it happens, as Doolittle has well said, we may be using some little kink that we supposed all the world knows of. Before we made foundation by the new process, by which the trimming is done by machinery, we recognized the fact that drawing a thin sharp knife quickly across the wax a few times would generate heat of itself; but let me tell you, doctor, a knife kept in boiling water, and drawn across the sheet of wax rapidly, between times, is better still.—Ed.]

"Foul-brood honey will be all right if it is boiled for a period of four or five minutes," p. 354. Wouldn't longer time be better? Bacteriologist Mackenzie (Howard's Foul Brood, p. 42) says spores grew after boiling 2 hours, but there was no growth after 2½ hours. If that's all straight, wouldn't it be better to boil 2½ hours? [I based my statement on the authority of Cowan. I think he once told me that boiling for 45 seconds would kill every spore. However, we never boiled any honey that was infected with foul brood. We made a short job by burning it up, brood-comb, frame, and all. No one ever heard of a case of foul brood resulting from the use of foundation made from wax coming from an infected hive, even though the wax had been subjected to a temperature much less than 212 degrees, and for a much less period than 2½ hours. If there is such a case, let's hear it.—Ed.]

The wholesomeness of honey is recognized by physicians. A friend of mine is forbidden by physicians to eat any thing in the line of sugar or starch, but is allowed pure honey. I use honey with postum cereal because I think it safer. But if the honey is best quality I like it as well as sugar. [It is a fact that I know positively in my own experience—no guesswork about it—that I can eat a certain amount of honey without inconvenience; but cane sugars, maple sugar, candy, and all such stuff, I am obliged to let alone. All these, strangely enough, seem to bring about a sort of sneezing catarrh; and honey will likewise do so if I take too much of it at a time. Now, doctor, as an "M. D." I will ask you to explain *why* the mucous membranes of my nostrils are affected more in one instance than in another? I have tried it over and over again. One will cause sneezing in a day or two, while the other is, for the same quantity, very much less inclined to do so. Some day I'll give you some of my observations along these lines; i. e., how cane sugars and starch affect others in much the same way.—Ed.]

Robbing is stopped thus by M. F. Chatelain: Smoke the hive of *the robbers;* in two or three minutes close the entrance. Wait till the returning bees crowd outside; open enough to insert smoker-nozzle, and smoke. Open entrance wide, and let all go in. Then smoke like sixty till bees rush out of hive. That stops 'em.—*L'Abeille et sa Culture.* [The plan would work tiptop providing the robbing were confined to one colony, as it is sometimes. Whenever we get ready to move bees from an outyard during the middle of the day we give the entrances of the hives to be moved a good smoking; and in about five or ten minutes give them another smudging. The effect of all this is to prevent the bees from flying—that is, they stay at home, either because the smoke makes them sick or because things appear to be in bad shape at home, and need "all hands to straighten things up." But when robbing bees get started at *our* yard, there are apt to be more than a dozen colonies having a hand in the fracas; and if we do not attend to things pretty soon, every colony in the yard will be "in it." Robbing, like fire, should be attended to at the start; and I do not know but Chatelain's method is as good as any. But in the mean time I would slip one of our mosquito-netting bee-tents right over the hive. This prevents robbers from getting in, and confines to the tent those going out. When robbing is quieted down I sometimes let loose the robbers from the tent after they have had time to sober down and think over the error of their ways.—Ed.]

"I do not see how you and the rest of the chaps put me on the same side of the fence with Doolittle. I supposed I was on the tiptopest part of the fence."—Editorial footnote, p. 336. O Ernest! Just listen to what you said. "At present I do not see any objections to putting up honey in the manner Mr. D.

describes. . . The front of the case, as Mr. D. says, will be apt to have the best honey out for display, and not for the purpose of deception." Do you call that on the fence? And, anyhow, what business should you have on the fence? If you get on the fence in a matter of that kind you ought to be knocked off with a club—knobs, too, on the club. [Oh my! doctor; you are not fair. You have taken patches of my footnote and put them together in such a way that they put me clear over on Doolittle's side of the fence. I am now going to take two more patches—the very ones you omitted—from that same footnote. Read: "With regard to facing crates of honey or barrels of apples, I think it all depends upon whether *intentional* deception is used. . . Whenever we buy honey we always judge of a crate by random sections picked out here and there in the crate, and never by the facing." Notice the words "*intentional* deception." Put up your club with knobs on. I grant that these last quoted lines do not put me clear on the other side of the fence; but used in connection with those you quote, they take off the curse somewhat. However, in our last issue I entirely renounced Doolittle's doctrine, and got on the other side of the fence.—ED.]

CALIFORNIA ECHOES

BY J. H. MARTIN.

DOOLITTLE SCORED AGAIN; JOKE DEPARTMENT IN BEE JOURNALS.

The moving of bees to pastures new still continues. We learn that J. F. McIntyre has moved 260 colonies to the alfalfa fields of Bakersfield. We hope the results will be highly successful.

Mr. E. Hart, of Pasadena, on March 25th reported the first swarm of the season. The gentleman's bees are within the city limits of Pasadena, surrounded by peach, apricot, and orange orchards. Quite a fair yield is expected from the latter. Mr. Hart will move his bees to the river bottom as soon as the orange blossoms fail to give nectar. Mr. Hart is a very considerate bee-keeper. Should he keep his bees in their present location through the whole season he would have an immense amount of trouble from those who dry apricots and peaches extensively in his vicinity. By moving his bees he works in harmony with his fruit-growing neighbors, and that is the way all good bee-keepers should do.

I believe that Wilkin-cistern affair you set going the rounds of the bee-papers is a good joke on you, Mr. Editor. You will find that the honey is put into that fire-proof concrete cistern, or cellar, in five-gallon tin cans in the good old orderly orthodox way. [You ought to have kept still and saved me this humilation.—ED.]

I saw Mr. C. A. Hatch, to-day, and said, "Mr. Hatch, suppose you were dealing in honey, and received a quantity of comb honey faced up with nice XXX white honey, and behind the facers you would find only X or dark buckwheat honey; what would you think of the bee keeper who put it up?"

"Why, the man who would do that is a fraud," replied Mr. Hatch.

"That is just what Doolittle advises,"* said I.

"Doolittle?" said Mr. Hatch.

"Yes, Doolittle."

"Well, I can't help who said it," replied Mr. Hatch; "it is a fraud; and any commission house receiving it would so pronounce it."

Mr. Searles, an apple-dealer with whom I am at present staying, complains greatly when he gets a box of apples that are faced up nicely, and beneath there are all sorts, just like Doolittle's honey. Said I, "Mr. Searles, what do you think of a man who puts up his apples that way?"

"He is a fraud," said Mr. S.; "and when I once find a man who is up to such tricks I never patronize him again."

"Well," said I, "suppose he tells you that the box is faced up with good apples, and that there are poor ones below; what would you do?"

"Well, I don't want apples unless they are all one or the other. If a person puts up his apples that way he is liable to sell them without telling the fact; or if he does tell the facts, the next man will not. Oh, no! I want straight goods every time, and so do my customers."

Now, I am quite sure that every straight man will say the same thing. Of course, we all know that Mr. Doolittle is an honest man, and means well, but he has a strange way of showing it sometimes.

Just see what Doolittle says about painting nives in a recent number of the *Progressive*. Now, Bro. Doolittle could not have been giving that in a broad way. His advice was all right for York State, but how about hot climates? Here we want a hive that will not absorb the heat of the sun. From my observation a hive that is black with age is more liable to have the combs melted down in our hot weather than is a hive that is kept well painted and white. One rule will not work well for all climates.

Well, wonders will never cease. The *Review* has started a joke department. Just see the column of good white paper and black ink that Mr. Aspinwall wasted in the last *Review*. But really the most astonishing thing in the same number of the *Review*, under editorial offerings, is that the editor winds up one of the offerings with a "whoop-e-e!" Well, just as sure as you live I should not be more astonished should I go into a graveyard and have a tombstone waltz up to me and shout "Whoop-e-e!" Just think of it! "whoop-e-e" from the dignified and sedate editor of the *Review!* I did think for a minute that I would stop the paper; but I will hold on a little longer. This joking business in bee-literature has got to stop. I don't see what this world is coming to, any way.

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*Doolittle did not advise. He simply said that he could see no harm in it, but doubted the wisdom of doing it.—ED.

Mr. W. T. Richardson, of Ventura Co., after disposing of his 60-ton crop of honey, and finding that he would get no honey this year, has gone east, accompanied by his wife. He will spend several months with friends in the New England States. Mr. Richardson is not enjoying good health; and it is hoped that the journey, and the rest from the busy cares of a busy life, will have a beneficial effect.

Ridge-Pole
Musings

COMB-HONEY SHIPPING-CRATE.

Getting Combs Well Attached to Sections; Bottom Starters Emphatically Indorsed.

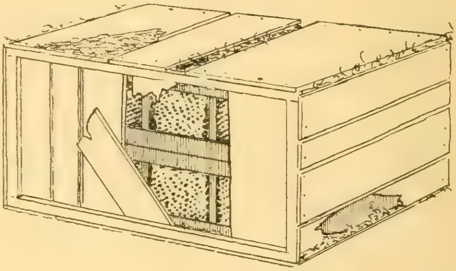
BY R. C. AIKIN.

I observe that a very large crate for comb honey is advised. The idea is to crate 100 to 200 pounds or more in one big crate, and put handles or some sort of lug or projection on so that two men can handle by taking hold one at each end or side. Such a crate has never seemed to me to be what we want. I think if I were a freight-handler I would lose my patience when I came to handling such a clumsy affair. How is it with our extracted-honey packages? I can pick up one 60-pound can and put it where I want it, and do it with comparative ease; but the two cans in a box make a package that is a back-breaker. I can, and sometimes do, pick up a box of two 60-pound cans, and carry or load and unload it, but usually at the cost of backache. I have seen the time when I would have gloried in handling a package of 100 to 200 weight; but now that I know the folly of such things, I want to save my own and others' weak backs, and also make it easy for those whose backs are yet good to do their work without the necessity of breaking them.

It is claimed that the big crates will, because of their size and weight, be handled always by two men, picking them up and carrying them instead of throwing or tumbling. I think I should be tempted to tumble the big thing over and over if a helper were not at hand, while with a small package I would pick it up and transfer it to where I wanted it. I think others would do likewise.

I once moved eight tons of comb honey. It was all cased in 24-section cases—double-tier. I was loading a car about ⅓ mile from the honey-house. I backed a one-horse express wagon up to the honey-house door, picked up the cases one at a time, walked to the door and gave them a push, shoving or sliding them into the wagon. The first ones in I sent sliding forward so as to fill the front without having to get in to carry them forward. I would load from 800 to 1000 pounds at each trip, putting the most of it on the wagon without having to get in. I would then drive to the car, and unload by setting them one by one into the car-door, an assistant remaining in the car to pack while I went for another load. In this way I loaded at the honey-house, and unloaded at the car, the entire eight tons in less than ten hours. The package that will be handled with ease, rapidity, and (it seems to me) with the greatest safety, is one that one man can pick up and carry without any heavy strain.

I have devised a crate for comb honey that seems to me an improvement on any thing I have seen in that line. My object was to combine lightness and cheapness in construction, a size that would make it easy to handle by one man, and so constructed that it would always be carried and set with the sections on *edge*. It would be very hard to describe it so as to make it all plain, so I have asked the editor to have it illustrated.



Look at the engraving, and you will see that the crate is made in a very simple manner. Four of the faces are smooth—that is, the boards are nailed on the outside. The other two faces have the boards nailed on the *inside*, thus forming a sort of panel on these two sides. These panels form a very convenient handhold so that it is very easy to pick it up by clasping a hand on each side with the fingers under the rim, very much as a hive, super, or case is picked up by inserting the finger-tips in the notches in each end. If you attempt to pick it up with either of the two paneled sides next to you, there is only the smooth boards to hold to; hence you would, 99 times out of 100, pick it up with a hand in each panel.

Now, if this arrangement will cause the crates to be picked up uniformly, as described, then if the sections are put in so as to run parallel with the paneled sides, that insures that they will always stand on *edge*. A section is safe so long as it is on edge, no matter which edge is up. There are only six positions in which it can be placed, and four of these are safe. The crate is designed to hold two cases, making a 50 to 60 pound package, but may be larger or smaller. It is also a little larger inside than the outside of the case, the extra space (an inch or so) to be filled with excelsior, crumpled papers, shavings, straw, or other material that will cushion.

I assume, of course, that the matter of convenience in laying hold of the crate insures almost to a certainty that it will be picked up, carried, and set down right. If this be true, the probabilities are that, in the majority of cases, it will be set in a car with sections parallel with the car, because a man will walk toward the car end and set it down when looking in that direction. Thus, while it does not insure against setting sections side foremost, it very much lessens such danger.

I have not shipped very much in this way, though what I have shipped has gone safely. I have always worked the home market largely, and ship but little by local freight.

The question of cost naturally comes up. The crates can be made very cheaply, and also very light. The poorest grades of lumber can be put into them. Those who are shipping small lots of sections to retailers can use these crates over and over again as egg-cases, milk-cans, and such are used, having them returned at a trifling cost. I am not prepared to say just what such charges are, for I have not had much experience in that line, though I think for short distances the usual charge is 5 cents each, probably less where quite a number are returned, or possibly where a number are in one shipment, at a minimum charge of 25 cts.

POOR ATTACHMENTS OF COMB TO THE SECTION, AND WHY.

There is some question, perhaps, as to the real need of such a crate. I believe it possible to produce section honey so perfect as to ship without such care-taking. If the comb be attached firmly to two sides of the section, it requires a hard rap to loosen it from the wood. Two causes—possibly three—give poor attachment to the sections. The two principal causes are slow flows and weak colonies. Even strong colonies will do poor work in slow flows. Then, too, if the partly filled super be raised and the empty put beneath, one may give too much room, and so have none of the sections properly filled. If the colony starts a super, and the flow stops before it is finished, the attachment will be weak. One of the most important points to be guarded in producing section honey is to have no more sections on than can be properly worked. A close watch should be kept on the strength of the flow; and, if weak, add room at the top by putting the fresh super over, not under, the full one.

Full sheets of foundation are apt to induce the colony to start more comb than they can properly fill, and, if so, will not build properly to the wood. Could I judge accurately, and know just how many sections would be needed, I should want the last ones on to have narrow starters only. The bee is loath to start new comb when there seems little prospect of its being filled; so if the flow is "tapering off" they prefer to edge in around combs already built and filled; so in such a case, with starters only to work on, they were led to fill out plump to the wood of the section. Full sheets in the sections act on the same principle as ready-made comb, though in a less degree.

One of the very best things to insure attachment at the bottom is a bottom starter. I notice occasionally some one condemns them; but I have not seen any thing in print yet that I counted as a reasonable argument or any thing like conclusive evidence against them. I think in this journal, at least somewhere, I saw some one objecting to them because the bees built upward from them instead of going to the top to begin. One or both of two things are wrong in such a case; the colony is too weak to occupy the super, or the flow is too light. Usually the former is the true cause of the upward building.

Some object because the starter falls over or is gnawed out. I have very little trouble with either. The starter should not be over 3/8 high. I sometimes cut them about 3/8, then in putting on with a hot plate a part is melted off so that about 1/4 inch is all that is left. A quarter-inch is better than 1/2, because less liable to lie down; yet it is almost as sure to cause attachment or building down to the comb. From 1/8 to 1/4 is high enough when the starter is on, though the wider one is much more easy to handle in putting on. I make no pretense to having the top starter or sheet come close down to the bottom one. The line of wax on the bottom, even though but 1/8 high, seems all that is necessary to induce the bees to join the comb down to it.

A starter will seldom be cut out entirely unless it falls over, and even then the waxy line serves the purpose. If supers be left on long, and no honey coming in, they will trim down the starters quite frequently; but the fact that they will cut out more or less top starters under such conditions proves the weakness of the argument. I would not think of leaving out bottom starters if the honey were to be shipped. For one's own table, and to some extent for home trade, the bottom starter is useless; but since it does not cost much to put it on, a good plan is to put it there and get a better-finished section. I know it will do it.

Come to my honey-room and I can show you a large per cent of sections better attached at the bottom than at the sides. I have even had some better attached at the bottom than the top, caused by too few bees and too little honey. I have now in my honey-room sections that I believe would stand almost any knocking about, almost to the point of breaking the case, except when the weather is very cold. At least, I feel sure they would stand all bumps in a freight-car coming against them edgewise. Bottom starters are a *good thing*, and side starters would be a further improvement.

Since writing the foregoing I have interviewed our railroad agent about returning shipping-cases. He says egg-cases are returned by express at 5 cents each, and by freight at fourth-class rate from point of shipment. Between here and Denver the minimum charge is 25 cents, no shipment being received for less. The rate per 100 pounds is 27 cents, so you see that I could have crates returned from Denver at a cost of 25 cents for any number up to almost a hundred pounds, a hundred-pound shipment costing only 27 cents. As the crates can be made at from 5 to 8 pounds each, they could be returned from Denver—56 miles—at about 2 cents each, providing enough are sent at one time to make a 100 pound shipment.

Loveland, Col.

[Friend Aikin sent two crates showing his manner of putting up the shipping-cases of honey, and I had our artist make drawings of one of them. There are many things in its favor. But there are two objections that occur to me, one of which is already referred to by friend Aikin himself; namely, the extra cost of the several smaller crates as compared with one large one holding the same capacity; and then, too, I am a little doubtful about commission men returning them as "empties." Would they not be apt to dump them on the general pile of refuse boxes and shipping-crates? Still again, there has been no complaint that the large shipping-crates holding 200 lbs. were too unwieldy to handle. While 50 lbs. is all *one* man can conveniently lift, yet two such men can more easily pick up 200 lbs. if it has convenient handles.

With regard to getting combs well filled out to the wood, friend Aikin knows what he is talking about, for the samples of combs he sent are evidence in that direction.

The only trouble that I have had with bottom starters was their curling over, and I believe I so reported it in GLEANINGS. I did find, however, that, when they are only ¼ or ⅜, they would answer the purpose quite as well, and no curling.—ED.]

GENERAL CORRESPONDENCE

FACING COMB HONEY.

A Bit of History; a Rejoinder.

BY G. M. DOOLITTLE.

Yes, Mr. Editor, Doolittle does care to say a little more on that subject of "facing comb honey," for it seems to me that all the ideas advanced have failed to take in the conditions to which the older bee-keepers were accustomed. Bringing up has much to do with the way a person looks at a matter; and while much of the instruction that is given at the time when "as the twig is bent the tree's inclined," may not be just as it might be, yet it has its bearing in all future life. So let us go back over the past a little and see which was right—the past notions or those of the present. In the early fifties my father took all of his honey in boxes holding from 15 to 25 pounds. He sold those boxes as they came from the hive, good honey, fair and poor, all mixed together, as the bees left it, sometimes selling his whole crop to one man. Was there any thing wrong in that? Present arguments, put forth by the non-facing side, would have made him cut that honey all out, sort it, put a little the poorest on the upper side, and take what each grade would bring, or else the transaction would have been a *dishonest* one. Father's first boxes were made with no glass in them; but he wished to know when the bees commenced work therein, and also see when they were completed, so he bored a two-inch hole in one side, put a glass on the inside and a "button" on the out, and, by turning the button, he could see what was going on inside, at any time. Later on, glass was put on the honey so that the "railroad smashers" would handle it with care when it was being shipped; and *glass*, so as to make each shipping-crate a "show-case," is of recent origin. Was the old-time method to be censured, or the present? Which?

Next came the "quarter" or six-pound box, with glass sides, or with corner posts and four glass sides. These latter were styled "glass boxes," and brought from one to three cents per pound more in market than did the former; but when sent to market the *whole* crop was put together—good, bad, and indifferent, and the whole sold at *one* price, "taking the whole crop." Present arguments say, "Sort that honey or you will be dishonest." Are they right?

Next came the two-pound sections, in the early seventies. Doolittle has his *whole* crop off—white clover, basswood, mustard, and buckwheat. He takes a fair sample of the lot to a buyer, and sells it for 28½ cents per pound. Having the average before the buyer, Doolittle asks, "How shall I crate it?" Reply, "Put an average in each crate, then each one to whom I sell will get an average of the whole crop, the same as I bought it." I think I see lots of Miller's, Hasty's, Snyder's, Whitney's, and Thompson's hands up in "holy horror" of the *sin* being committed when I add the other part of the instruction given, "and face it up with the nicest and whitest you can find in the average for one crate." But, gentlemen, remember that, about the first rules for grading honey were passed in 1891 by the North American Bee Convention in its session at Albany, N. Y.; and *Bee-keepers* were the *main* movers in this thing, to their own loss, as honey has "tumbled" ever since. Buyer sold the crop of honey alluded to last, at 35 cents per pound, distributing it in many of the cities of the East; and both by letter and personally have I been told by bee-keepers about seeing said honey in some one of the cities, but not one of them thought aught but that it was honestly put up; or if they did, they did not manifest it by saying so. No, this dishonesty part is of recent origin, and originated in the idea that any man is dishonest who would attempt to sell his crop of honey as a whole, without sorting or grading it. A little incident:

A neighbor did all of his wool up with the dark or outside ends of the fleece out (as Thompson would have us do with our honey, if we would be honest). I went with a buyer to see the wool. He would offer the man only two-thirds the price for this wool that he did for other fleeces which were done up with the whitest and nicest side out. He did not buy it; and when we were alone I asked him if the wool was not just as good done up in this way. After some words regarding the folly of the man who put it up, he said, "Of course it is just as good, but no one would buy it of me put up in that way, for that is not the way those who buy want it, from the manufacturer down." Yet some of our modern bee-keepers would have the farmer separate each fleece of wool into three or four parts, putting each grade by itself, and the poorest of each grade on the outside, that he might be *honest* in the sight of God and men, and seem to rejoice at Hasty's "throwing" fire and brimstone at me, because I think there is nothing wrong in the farmer putting up his wool in "the good old way," or sending his product of honey to market, as I was instructed to, during nearly all of the first half of my bee-keeping life. I was informed that those retailing that 28½-cent honey of mine "sorted" it, as all retailers used to expect to do, and sold the fancy at 50 cts. per pound, and other parts at 45, 40, and 35 cts., without a thought that some one was trying to cheat them by putting up the average of the crop in each crate. And retailers would be doing the same thing to-day had not bee keepers pushed something that was against their own interests, and then denounced the one who did not "dance when they piped." From this selling honey from sample, or by the buyers looking over my whole "pile," came the part in my article regarding "*every case alike*" which *all* seem to have overlooked when they "jumped on to me." If Doolittle had desired to be dishonest he would not have put that in. By doing that he told the world plainly that he considered the commission man "proxy" for the raiser; and in showing any customer the contents of one case, he knew what was in *every* case, and, thus knowing, he was to sell "to the best advantage of the consignor," and the buyer was to make his own "*grading*" of the "average" product as he thought was to his best advantage. No secret mark on such honey, Bro. Whitney to the contrary notwithstanding. The X's are put on only where honey is assorted; and this, so that, when the finally crated pile is finished, each case can be told from the other by looking in the handholes; for I have told you before that few men can carry in their "eye" grades of honey very nearly alike, unless the two cases are set side by side.

It seems to me that the whole matter of this controversy hinges on whether a bee-keeper may sell his crop as a *whole*, or whether he must grade it. Formerly I sold my crop as a whole; but of late years the "mad rush" of the grading faction has compelled me to grade it. I am still firm in the conviction that, had no grading been entered into by bee-keepers, but an average put in each case, we should have gotten more for our product with less labor. But as this "rush" was made, I was led to say that I doubted the wisdom of trying to sell honey as formerly (white on outside of cases, then XX, X, or buckwheat in the center), but considered there was nothing *dishonest* in doing that way. And now, after having put the various sides before the readers of GLEANINGS, I will close by saying that, if any thing I have written in this matter has given offense to any, I am sorry; for I have no other object in life than to do and advocate that which is right.

Borodino, N. Y.

[While I am still ferninst Doolittle, I deem it only fair to keep mum. If the other fellows want to give him some more "fire and brimstone," let them do it in some other journal. While they can't and wouldn't assail his honesty, yet, if given a chance, they might brimstone his logic.—ED.]

CHALON FOWLS.

The Man who Realizes Double Prices on His Honey.

[I take pleasure in introducing to you one of the most progressive and thoroughgoing bee-keepers in the United States—Mr. Chalon Fowls, of Oberlin, O. Away back in the early '80's, when I was tugging away at Greek and Latin at Oberlin College, Mr. F. would occasionally visit me at my room. At that time he had a bad case of bee-fever, and, flushed with success, he was literally chock full of bee-lore, and of plans for the future.

CHALON FOWLS.

He had a small farm, and the neighbors made fun of him because one year he left his wheat unshocked in the field, and "fussed with the bees." But later on, when they found that he was making, off from those same hives, a clear profit of thirty dollars per hive,* they changed their tune.

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*He can't make that much now at present prices.—ED.

The upshot of the whole matter was that Fowls gave up farming, moved to town, and has joined the ranks of a class of bee-keepers who are few in numbers, and far between; namely, specialists—that is to say, those whose *whole means of livelihood* comes entirely from the bee-business.

But Mr. Fowls' specialty, in his specialty of keeping bees, is selling honey at about double the prices bee-keepers generally secure. He has already explained how he does this, on page 152 of GLEANINGS for March 1st, last year, and he has something more to say on that same point.

Out of the material that he furnished me for a write-up, I have selected the following, giving it in his own words.—ED.]

With varying fortune the bees have always paid better than farming, as a rule. I generally kept from 60 to 100 colonies until about three years ago, when, owing to continued ill health, I gave up farming altogether and bought 50 colonies more of bees. Since then I have made it my exclusive business. Two years ago it was a rather poor season here, and I raised 5600 lbs. of honey from 125 colonies, spring count—1200 lbs. comb and the rest extracted. The comb sold at an average of nearly 14 cents, and the extracted at 10 cents.

Last season's crop was a fair one, but not of the largest, as the drouth struck us in July, so we got nothing after the first week. We had 8000 lbs. from 136 colonies, spring count—2000 lbs. comb, the rest extracted, and all but 400 lbs. choice white-clover honey. The comb sold at an average of 12 cents; the extracted at nearly 10. My comb honey is raised without separators, on full sheets of foundation, and always brings the top price. The extracted honey is ripened on the hive, and always weighs 12 pounds or more to the gallon, and is nearly all sold in my own and adjoining towns. I now have 175 colonies in three apiaries. My main help is my oldest daughter, Violet. Through the swarming season my wife helps in the home apiary. My bees wintered well. I have lost only two colonies up to date—one by starvation and one by queenlessness.

I want to call your attention to the prices I get for my extracted honey. I described my methods of marketing in GLEANINGS about a year ago. As my article was copied in the *A. B. J.*, I concluded it must have attracted considerable notice. At any rate, it was criticised in an article by Mr. McKnight, of Canada, at the time. As I was very busy I paid no attention to what he said. Among other things he said that very much honey could not be sold at the price I mentioned. Well, "the proof of the pudding is in the eating." My last season's crop of extracted honey, 6000 lbs., has been sold, nearly all in my home market (that is, my own and neighboring towns), at but a slight reduction on those prices. It is a significant fact that in Elyria, a town of about 10,000, *every one* of the grocers handles my extracted honey, paying cash on delivery, and they will not buy of others, even when offered at a lower price. Now, I submit it to you if there can be any thing very far wrong in my methods of marketing when I can get nearly double the prices for my crop that some others do. I imagine my family would fare pretty poorly if my honey brought only half as much, as we have no other income excepting the small amount derived from the sale of bee-keepers' supplies to our neighbors.

THE LATEST GOLDEN SECTION-CLEANER.

Why the Belt Machine is Better than one using a Solid Disk.

BY. J. A. GOLDEN.

In presenting my section-cleaner to the public I did not expect it to be understood that an old sewing-machine was the only way in which a machine could be made. That old machine being my first idea of a cleaner, I used it to illustrate how a machine could be made, first, by a revolving wheel faced by gluing sandpaper on it, and operated by foot power, by which over 1000 sections were beautifully cleaned, and by only the one coating of sandpaper.

There was one thing overlooked when writing my former article, which is in regard to propolis sticking or gumming up the sand-belt. I will here state that, if a section contains much propolis, when soft and sticky, or honey is on the section, it is almost sure to stick on the belt or wheel; at least, that was my finding; and when I lifted sections from the crates I would take my old knife and shear off any bulky particles, if there were any; but as I use nothing but a bee-space over my crates, I am seldom bothered with an overplus of propolis; then if I want to dress some sections I set that amount in our cellar, sometimes over night, and dress in the morning; then there need be no fears as to gumming the belt. But I want to say there is much in how a section is held on the sand-belt or wheel. If it is held crosswise of the grain of the wood there is but little danger of gumming or sticking if using No. 3 sandpaper; then turn the section, merely touching the revolving wheel or belt; thus a better polish is secured. However, one must be careful not to press too hard, for the sandpaper would soon cut the section through at the corners. In using the wheel, one must be very careful when applying a section to any revolving solid substance, or the delicate comb will receive a jar that will crack it unobserved; but you would find it later on when handling your honey; but by being careful the wheel does grand work, and beats hand scraping a thousand times over. This unnoticed cracking of the comb was what led me to devise the belt arrangement, of which this cut will fully explain its adaptability to the cleaning of section honey; and no fears need be entertained as to cracking the delicate comb in any shape or form; and I am satisfied that three times, at least, more work can be accomplished with the belt device over that of the wheel.

Some one may say, "How can that be?"

Well, I'll tell you. If you use a solid surface you must take pains in pushing your section over the wheel or you will see it jump and tremble; then look out for a cracked comb; but if you are cautious it will be all right; but with the belt you may pick up a section, clasp it between both hands, and dab it down on the flat surface between the wheels or rollers crosswise, and the belt gives under its light pressure, and no jar is perceptible; but a forward pulling is observed when the belt is revolving briskly; but, don't hold the section there more than long enough to merely touch, or it will have to be put with the unmarketable honey. Thus the four sides and edges can be gone over while one side is cleaned by a solid surface if pretty badly stuck up with propolis, or that's my experience with the two machines. They can be constructed of a simple form, thus fitting them up at a price that no bee-keeper could afford to do without one; for the time has come when, as Mr. Root says, the future market will demand a box entirely clear of stain and propolis, which only voices the views of Batterson & Son, Buffalo. I here quote an extract from a letter received a few days ago. After complimenting us on the cleaner the writer says it is a fact that honey-sections must be clean and bright, or we can not begin to obtain the market value for the honey, even if it is choice. Now, after such prediction, coming from such authority as the above, would it not be wisdom for bee-keepers to consider the problem presented to them, especially when contemplating the shipping of honey to the city markets? I could give quite a number of extracts from letters just received from prominent bee-keepers and dealers in honey; but the above should be sufficient.

Reinersville, O., Feb. 16.

[Almost simultaneously with the reception of the article above I received another one regarding the same machine, from Miss Fitch, who is the expert operator of the section-cleaners, and who, I understand, is a young lady whose parents have been near neighbors of Mr. Golden for years, and who has helped Mr. Golden in his work among the bees.

With regard to the machine itself, I will state that we have it here now in our shop; but owing to the fact that the bearings are of wood, and the driving mechanism of wood, it runs rather harder than it ought to. But this difficulty can be easily overcome by making certain parts of metal, and otherwise strengthening up the frame and the treadle motion. —Ed.]

* * *

THE GOLDEN EUREKA SECTION-CLEANER.

Does Soft Propolis Gum Up the Belt?

BY FLORA FITCH.

Mr. Root: — We ship you to-day our latest and best model of section-cleaning machine, the Eureka. Mr. Golden has made and thoroughly tested four machines of different models, and we are confident the Eureka will prove the most satisfactory in every respect. It is easy to operate, and does the work very satisfactorily. However, it is not best to have the belt too tight, and one can govern this to suit by pressing on the section as the case requires. The machine surely will be welcomed by the women-folks and grandpas who have to clean sections by the old method of scrape, scrape, scrape.

We have received many letters in the past three weeks, inquiring what the machine will cost. All say they will want a machine, so you see the young bee-keepers believe in progression; and it won't be very long, Mr. Editor, before it will be said by all bee-keepers all over the land, that the belt section-cleaner is one of the greatest blessings the bee-keeper has, as it is a great labor-saving device; and not only so but the apiarist can put his honey on the market in a perfectly clean section.

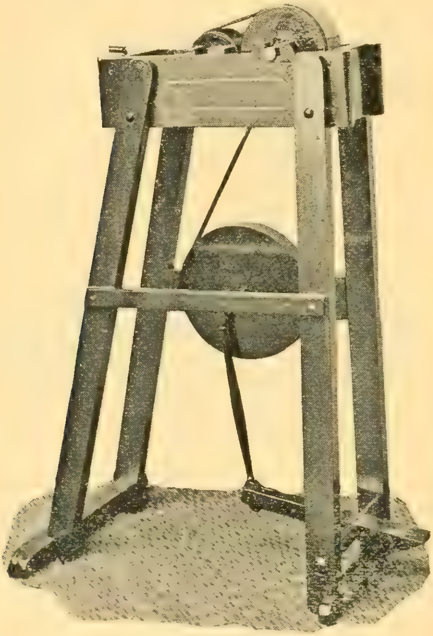
MISS FLORA FITCH.

Now as to cleaning propolis from sections, we have set old sections in a warm room until the propolis has become soft and sticky, and, when applied to the cleaner, they would stick to the belt; but when the heavy portions were removed with a knife the sections were quickly cleaned without any gumming of the belt. But if a section has any honey on its surface, and is applied to the belt, it will gum it.

All bee-keepers know there is a great difference in propolis; some kinds seem to become brittle as soon as the air strikes them, even in the warmest weather, while other kinds remain soft and tough until quite cool.

Last season, when taking off honey, i. e., when lifting the sections from the crates, we usually clipped off any clumps of propolis with an old knife; and if some honey was wanted we would set a crate in the cellar over night and clean them in the morning, when we were never troubled by the belt gumming. However, after the season closes and the propolis becomes hard, by using coarse sand-belt revolving at a high speed, holding the section crosswise of the grain of the wood, there is no danger of the belt getting gummed up—at least that has been our experience, and we have cleaned hundreds of sections, all of which looked, after cleaning, as though there had never been propolis or stain on them; and that honey sold right at home for fifteen cents per section, while much other honey went begging, and is begging yet.

So, Mr. Root, when the machine arrives we shipped to you, get some sections containing propolis on them (not great hunks, though), and set them in a warm room until they are warm; then apply them as I have stated, with the belt revolving at a good speed; and if there is any gumming of the belt, please tell the bee-keepers all about it.



GOLDEN'S LATEST SECTION-CLEANER.

Why do we talk about cleaning sections when the propolis is soft and sticky? We always preferred propolis hardened before cleaning. I believe it was Dr. Miller who, in GLEANINGS two or three years ago, said he preferred propolis to become hard before cleaning; that he did not like the sticky stuff, and that's about the way we look at it.

There, Mr. Editor, I shall expect to hear you say that you are sorry you ever solicited a further acquaintance with the writer in the pages of GLEANINGS; but I am sorry Mr. Rambler (page 249) has requested you to stop his paper. But tell him to sing that *little* song he composed for Alfaretta:

The night is stormy and dark;
My lover is on the sea;
Oh! let me to the night winds hark,
And hear what they say to me.

Then I think he will order his paper continued.

THE T VS. THE IDEAL SUPER.

A General Discussion of the Features of Both; Tall Sections, and the Editor's Opinion of them Misquoted; is it Desirable to have Comb firmly Attached to the Wood of the Sections?

BY DR. C. C. MILLER.

I've got one of those Ideal supers, and it mixes me all up. For years I've been looking for something better than a T super. The editor of a certain bee-journal has more than once hinted very broadly that there was something out of whack in my thinking machinery because I couldn't see the great superiority of the section-holder. And I've thought that, if he'd handle a lot of T supers for a single season *as they ought to be handled*, he might change his tune. First he believed in wide frames — wide frames with top-bar, bottom-bar, end-bar. For a time, if I'm not mistaken, he believed in T supers, and then he went back to wide frames just a step nearer T supers than the old wide frames by leaving off the top-bar, and called them section-holders. Now he's gone another step toward the T super, left off the end-bar, and dubs it Ideal. If he'll go still another step and leave off the bottom-bar, perhaps he'll stand square in line with me.

Honest Injun, however, if I had to start all over I'd want to do some thinking and some testing before I'd decide whether I'd use the Ideal or the T. *If* fences are to be used, I'm a little inclined to the opinion that the Ideal has the best of it. The difference in depth, making the Ideal use the tall section, is a matter aside, for the Ideal could be made shallower, and the T can be made deeper. But that reminds me that it's a little queer how some of your ideas, Mr. Editor, have got mixed up in traveling north. You are represented as claiming that the tall section is better filled out than the square one, and that there will be fewer pop-holes because the comb comes out nearer the surface. Well, don't get mad. It's good training for you. It's the old story of the boy and his bull-pup. He asked his father to get down on all fours and play he was a big dog. When he did so the pup grabbed him promptly by the ear, and held on after the manner of his kind, and the old gentleman called lustily for the boy to take him off. "Bear it, father, bear it," said the boy, "it's the makin' o' the pup." But in this case it may be the "makin'" of you instead of the p—the people who worry you.

As compared with section-holders, it seems to me the Ideal is a distinct forward step, fence or no fence. The only loss in making the change, if it can be called a loss, is that the outside row of sections can't be jumped to the middle, and *vice versa*. But to those practical bee-keepers who considered this only an advantage in theory—one of those advantages that didn't pan out in practice, that loss can be sustained without tears. Instead of the topless wide frame, it is hard to believe it is not a material improvement to substitute the less expensive plain stick or bottom-bar.

Filling up with sections is probably about the same in one case as another; and when it comes to emptying, the advantage ought to be on the side of the Ideal.

Compared with the T super, the Ideal has the advantage that the sections fit close together, instead of having a space between them made by the upright of the T tin. Whatever the space made at the bottom of the sections by this upright, there will be the same space at the top, a space so large that, to have the sections square, and keep out propolis, it is necessary to use small sticks ¼ inch wide and less than ⅛ thick. That makes three extra pieces that can be dispensed with by using the Ideal. True, they are small and inexpensive, but it takes time to handle them.

The T super can probably be filled more rapidly, for with the proper arrangement it is probably the best of all surplus-arrangements for filling. In emptying the super, the Ideal ought to have the advantage.

As to cleaning, the T tins must be pitted against the bottom-bars, and they have a pretty big advantage. You can dump a lot of T tins in hot lye, and clean them in a twinkling by wholesale, but you must make slow work of cleaning the wooden bars.

If fences are to be used, and if it is desirable to have the separators come to the tops of the sections, and if it is important to have free communication between the upper corner of one section and the upper corner of the next, for the purpose of preventing pop-holes, then the Ideal has undisputed possession of the field, in all probability, for that rules out the use of the little sticks in the T super — a blow too heavy for the T super to sustain.

Of course, actual trial on the hives might make some change of view; but as the matter looks now, if plain sections and fences are to be used, then the Ideal is probably the best super for one to get who hasn't all the supers he needs.

There is one thing that puzzles me greatly in the discussion with regard to plain sections and fences. It can hardly have faded from the memory that much time was spent in trying to settle upon a proper system of grading. Views were by no means always alike; but in all cases there was agreement that having the comb firmly attached to the wood was a desirable thing. To get a section without pop-holes, with all the cells next the wood sealed, was admitted on all hands to be a difficult thing to be obtained, such filling out and sealing entitling to a higher grade. No one hinted a thing against its desirability. Now when fences and plain sections come forward with the claim that they can solve the problem and produce what has been so much desired, up rise those who say that it is better to have something not filled out so well. In the name of all that's reasonable, why didn't they tell us that before, and not allow so much effort to be wasted in seeking a thing not worth the seeking? Why was the Washington grading, making the firm fastening of the comb to the wood one of the distinctions (if not the chief distinction) of the highest grade, allowed to stand year after year at the head of the honey quotations, with no voice raised in protest? Why, oh! why?

Marengo, Ill.

[I really do not know why I should have been made to entertain opinions regarding the tall sections that I never held. For instance, I have been criticised for saying that the tall section would be better filled out than the square one. Mr. Francis Danzenbaker may have given expression to something similar; but I feel sure that I have never said just that thing, nor any thing like it, for I never believed, and do not now think, that, other things being equal, the shape of the box, within reasonable limits, has any thing to do with filling on the part of the bees. I have quoted the opinions of others; for instance, at the beginning of the year I said, referring to the tall sections: "It is argued that they look more symmetrical." . . . . "It is argued also that a tall box of honey standing right opposite a square one, of the same superficial surface and weight, appears to be larger. Whether these advantages are apparent or real, it is certainly true in some markets, at least (not all), notably in the East, that the tall sections sell more readily." It will be noticed I said, "It is argued." Now, my own opinion is not here given. I simply set forth the opinions of others, and let them stand for what they are worth. And, again, on page 519, GLEANINGS for 1897, Mr. B. F. Onderdonk, referring to the fact that Capt. Hetherington had ordered 50,000 cartons for tall sections, says: "When I see the Danzenbaker section filled solid to the wood all round — sides, top, and bottom, while my 4¼ sections have passageways through each lower corner, and even the whole bottom open, I feel a Christian regret for the experts, and rather hope to die an amateur."

Now, this is what I said in reply:

> Whether this difference was owing to the fact that the 4x5 looked larger by *contrast* than the square ones, and therefore brought more money, or whether the oblong shape is really more desirable, even when alone, is hard to say. If the 4x5 sells at a higher price because of the more pleasing contrast, then when the square sections are crowded out of the market I am of the opinion that the 4x5 would seek the same level in price as the 4¼.

To quote the opinion of others regarding the value of a certain thing is legitimate and proper. To set one's own opinion up to a high notch respecting something with which the writer has never had any practical experience, is silly.

Perhaps it may seem as if I were taking a good deal of space to set myself right; but I have been so frequently and persistently misquoted on some of these things that I deem it only fair to explain myself; and yet let me say that I cherish no ill will toward those who have gotten a wrong impression from what I have written.

Regarding the Ideal super, all I have to say is this: Essentially the same thing is used by Miles Morton, of Groton, N. Y. When *he* tests a thing, and says it is good, I feel almost like drawing the conclusion that it *is* good. However, the Ideal super is something that has not been tried yet by bee-keepers generally, and may not be the *ne plus ultra* in surplus arrangements — at least for the mass who earn at least a part of their bread and butter from the honey they raise.

In our shop we do a good deal of filling of T supers and Ideal supers; so that I believe I can speak with some degree of experience on this one point. Our girls will fill an Ideal in less time than they will a T super.

Your last paragraph, doctor, is a sort of poser. I did not suppose there would be any question at all as to the desirability of having the honey filled out solid to the section box all round, providing it could be done as easily as not. That even so progressive and strong a man as Doolittle should think otherwise, only convinces me that our best men can not all see alike. But, after all, the question simmers itself down to this: Will the *markets* pay more or less for honey having only partial attachments, and rounded off to the wood? My talk with commission men has led me to believe that they would pay two cents *more* for the plump filled-out sections, and that the other kind would have to take a second place. —ED.]

* * *

NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

At Frank Boomhower's, Gallupville, N. Y.; the Immense Buckwheat Acreage of Schoharie Co.; Yield of Buckwheat Honey per Colony.

BY ERNEST R. ROOT.

You will remember that I was last at Frank Boomhower's, watching him cutting glass for glassing sections. And that reminds me that I received a note from Mr. B., stating that I got the facts as to the method of cutting the glass all right except the diamond; that he never owned such a tool in all his life. Moreover that the tool I saw him using was one of those cheap things that cost only six cents, and which, in his estimation, was far ahead of any diamond ever made, for cutting glass.

Well, after I had spent a little time in the shop we went out to the apiary, at the rear of the house. Unlike most yards it was located on high ground, or, rather, terraces, one above another. Back of the house there was originally a very abrupt and steep hill; and as Mr. B. required more room for his bees he finally terraced it off, using loose stones for the walls, which are very plentiful in this part of York State.

Just at the base of the hill is a large pond supplying water for a millrace lower down. I obtained a photo (my "shots" were poor) that gives a fair view of the place, including the pond, or lakelet. The half-tone is not as distinct as I wish it might be, through a misunderstanding on the part of the engraver, who used his coarsest "screen," thinking that, perhaps, I desired to use the picture in an ordinary newspaper, using cheap ink and poor paper. But if you hold the view off at arm's length you will get a fair effect.

The main flight of the bees must be right across the pond. Remembering that we had had some reports to the effect that there were heavy losses as a result of having an apiary close to a body of water, I asked Mr. B. if he had ever noticed the bees dropping down and dying in the water. "That talk," said he, "is all bosh. Beyond the fact that my bees go down to drink they never go near, much less drop into, the water, although they fly over it hundreds of times every day."

At the time I visited the yard the buckwheat season was just on the wane; but the supers were piled up one on top of the other, showing that a good flow from buckwheat had been secured. Indeed, this dark rich honey is the main dependence of Schoharie County, as it is also the most reliable.

NOVICE BOOMHOWER, ONE OF YORK STATE'S LIGHTNING OPERATORS.

The next day we took a drive out among the hills; and from an elevated position at almost any point could be seen thousands of acres of buckwheat. Most of the fields had been cut, and immense brown patches could be seen in the distance, five and even ten miles away on those big hills, in almost any direction one might look. From one hilltop alone, and *within a range of three miles, I could see 5000 acres of buckwheat* — at least, friend Boomhower said there was about that many. Indeed, I about came to the conclusion that farmers thereabout raised nothing but buckwheat—buckwheat here and there and everywhere. The soil and climate seem to be especially adapted to its growing; and as it is always a paying crop the farmers not only grow it, but keep bees. I had some curiosity to know the amount of grain annually raised, and wrote to friend B. some little time ago about it, and this is his reply:

APIARY OF FRANK BOOMHOWER, GALLUPVILLE, N. Y.

Ernest:—Your letter is at hand inquiring about the buckwheat acreage of this vicinity. It would be impossible to give a near estimate; but I will give you the number of bushels handled at the several mills in this vicinity. Becker & Co., 75,000 bushels; Utman Bros., 50,000; Rickard & Co., 25,000, besides several smaller mills that handle all together about 25,000 more, besides thousands of bushels used up by farmers for feed and buckwheat cakes.

I have never kept an exact account of how much buckwheat honey we get on an average per colony. To give you a little idea of how it comes in when conditions are favorable, two seasons ago we extracted the yard all clean on Friday; finished up about two o'clock. On Monday following, all were full again. Most colonies had on two and three sets of supers, L. size (9 combs each). We weighed the honey from one colony, and got 46 lbs. This was the 13th of August, when buckwheat was in its prime. At this time, about 700 or 800 colonies were working the same territory. I could count from the bee-yard, which is not favorably located for a view, and within three-fourths mile were 100 fields of buckwheat, containing from 5 to 20 acres in each field. Last season, although not as favorable as some seasons, we got an average of 100 lbs. of extracted buckwheat per colony. This was at the out-yard which you visited when here, and about 500 or 600 colonies were working the territory.

Gallupville, N. Y., March 7. F. BOOMHOWER.

Mr. Boomhower has three sons. The eldest, Novice, I should think, was 23 or 24; and the next two, twins, 17 or 18. All three are expert bee-keepers. Novice is one of those "lightning operators" for which York State is famed. Indeed, I saw him go through an extracting yard at a rate of speed that made me think that we Westerners (or Easterners?) did not know much about handling bees rapidly; but, like his father, he seemed to be one of those careful, precise bee-keepers who not only work rapidly but who secure great results in honey.

* * *

WINTERING IN A DUGOUT.

Six Inches of Water in the Cellar an Advantage.

BY HARRY LATHROP.

Another spring finds us with our busy workers, the bees, removed from their winter quarters. From present appearances my bees have wintered well. I have to report the loss of but one colony out of ninety wintered in my dugout. All colonies outside, in double hives, are apparently all right, and all seem to be strong in bees.

There is one peculiarity of my bee-cellar, the one shown in the Picture Gallery of the last edition of the A B C. It is usually quite dry until toward spring; then when the break-up comes, the water will stand about six inches deep all over the bottom. This year it was that deep for four weeks previous to the time the bees were taken out. I have noticed that the bees are quieter after the water comes. This cellar has sand bottom, stone wall for sides, plank and dirt top, with a board roof over all. I have a large cellar under my dwelling at Monroe, Wis., which I arranged especially for wintering bees. It is well ventilated, and dry; but there is more dampness in hives wintered in it, and the combs are not in as good condition as those wintered in the old dugout.

HOW TO CLIP QUEENS.

The season for clipping queens will soon be here. As I have practiced clipping for years, and believe I can clip as rapidly and safely with no device but my fingers and the scissors as any one can by the use of any clipping-device, I will tell the readers of GLEANINGS how I operate. This is nothing new, but it may be of service to those who have yet to learn how.

The best time to clip queens is during the first real warm weather of spring before the colonies have become so populous as to make it difficult to find the individual. If queens are clipped only at the opening of the season one can easily keep a record of their ages, as queens to be clipped this year are always known to be of last year's rearing. But now to the work:

Having opened the hive, and quieted the bees with a little smoke if necessary, look carefully over the combs until you see the queen. Pick her up by the wings between the thumb and forefinger of the right hand; then transfer her to the left hand by grasping her legs between the thumb and finger. When your right hand is free, get hold of your sharp-pointed, keen-cutting scissors, which should be kept handy. Then, while holding the queen by the legs with your left hand, slip a point of the scissors under both wings on one side, and clip off about two-thirds of their length; release the queen on the combs, and let her run down. I have never seen any loss that arose from clipping queens. I would not think of trying to handle an apiary, especially one run for comb honey, in any other way. With clipped queens I allow natural swarming to take place; but there is no hustling round after runaway swarms, or climbing of trees. Having caged the queen when a swarm is issuing, the apiarist is master of the situation.

Browntown, Wis.

HONEY REPORT.

We are having the largest saw-palmetto bloom I ever saw; but as we are having a severe drouth—no rain of any consequence since last December—the honey-flow is comparatively light; but the honey is thick, and can be extracted before it is sealed. We have just extracted twelve gallons from four colonies, and expect to extract two or three times more. YOUNG G. LEE.

Glenoak, Fla., May 4.

BEE-KEEPING IN GEORGIA.

Bee-keeping is a long distance behind the times here in Georgia, and thousands of tons of honey and much wax go unmarketed, owing to the fact that our people have never realized their advantage in this direction. Here in southwest Georgia the gallberry is a certain surplus every year. It grows in and around the edges of the swamps, and is independent of weather conditions, while cotton and the cow-pea (or field-pea) give abundant stores for winter. JAMES L. MONTGOMERY.

Americus, Ga., May 2.

MR. WHITE'S ARTICLE OF FEB. 15.

Acting with Intelligent Selfishness.

BY W. A. H. GILSTRAP.

Several points in the above article struck my fancy, and here goes for a bundle of comments.

In the first place, Mr. White appears to be honest, and wants others to be so, or at least act with intelligent selfishness. He makes some remarks which do not apply to the average California locality.

The honey of this country is mainly put up by specialists. All such ought to know when honey is ripe. An acquaintance who owns over 100 colonies of bees, and has main charge of nearly 200 more, told me he extracted as green as possible, and would be glad if he could extract before any of it could be sealed. I should be glad of the chance to weigh some of his honey, but I suppose it would weigh well over 11 pounds to the gallon. Our dry climate ripens honey very rapidly, unless the weather is cool enough to granulate it in the tank, or even in the hive, unless the hive is *very* tight. Then I am convinced that it is not common for bees to store honey as rapidly here as in the East. Your bees store perhaps over half as much in thirty days as ours do in one hundred. An apiary storing three pounds of alfalfa honey per day for each colony would be a good run. I have never been able to extract so much.

Your editorial question as to the advisability of getting the members of the U. S. B. K. U. to pledge themselves not to put honey on the market unless it is first ripened, has to meet two objections, either of which would be death to the proposition.

1. The producer, who is ignorant or dishonest enough, or both, to put inferior goods on the market is just the man who is not likely to even want to join the Union.

2. If he did sign the agreement he would not care to keep it.

When you get bit as thoroughly as the writer once was by several bee-keepers not trying to keep a written compact which they made with other bee-keepers, then you will know just what I mean.

A law of national application, requiring extracted honey to be reasonably well ripened, should do a good work. Nothing else can cover the ground, in my judgment. For the California producer to sell his honey in his nearest town, and run his perpetual-motion machine in his apiary, would both be good schemes if they would work. What honey I produced last season was sold to neighbors, retailed at a town 20 miles distant, shipped with other honey to Chicago, and sold to a dealer who sold some to a San Francisco firm, and the rest to a German exporter. Of the crop—over 18 tons—only a little remains for experiment. We *must* ship the bulk of our honey somewhere or quit keeping bees. As we ship to Germany, England, Scotland, and I don't know where else, it becomes an export, and is, therefore, not governed in price by U. S. tariff laws. We have been learning honey production better than market-making. Comb honey sells better in our towns than extracted, partly because it granulates less. Of course, pure sage does not granulate. After my bees took such a fad for starvation and famine fever (which is not exactly starvation) I quit trying to produce sage, and now keep bees only in the valley. Many others have done the same.

At present I look for a failure of the mountain honey crop this year, with half a crop in the valley. This guess applies to Central California. Let Mr. Martin guess for the south end of the State.

I consigned several tons to Guggenheim & Co., of San Francisco, while there was no market here, as they were *well* recommended. Most of the honey brought me about 2⅓ to nearly 2½ cts. About the time it sold, R. A. Burnett & Co. gave me 4½ cts. at Chicago, which was almost exactly 3¼ cts. at Hanford. It was a part of the F. E. Brown honey you have so often referred to. Both lots were light amber, quality the same.

Caruthers, Cal.

[I was struck with your sentence, or clause, rather, "acting with intelligent selfishness." Mr. White is intelligently selfish enough to be strictly honest. He can see far enough ahead to know that deception, or putting out a poor grade of honey, while at the start may be more profitable, is in the end any thing but profitable. This kind of selfishness is the essence of real Christianity.

As to the matter of members of the U. S. B. K. U. pledging themselves to put on the market extracted honey of a certain specific gravity, I still believe if the Union were to make such a requirement it would do no harm, and might do a great deal of good. In the first place, it would set up a standard. Certainly the most representative and influential body of bee-keepers in the United States ought to set the pace for the rest of the bee-keepers in the country who are not members. The mere fact that some ignorant or dishonest persons might abuse the privilege would hardly be a reason for considering the scheme impracticable. One who joins the church is supposed to quit lying and stealing, swearing and cheating, and all other bad things. Because there are some scapegoats in the church who abuse their privilege is no reason why the church should not set up a high standard for its members.

It was Dr. Miller, I believe, who said we ought to publish the names of certain commission houses who, though responsible and honest, do not do as well by their customers as some other houses. Perhaps the last paragraph above from friend Gilstrap will satisfy the doctor. I am not sure but the idea is all right. In giving the bare facts above, we do not imply that Guggenheim & Co., of San Francisco, are dishonest or irresponsible. The probabilities are that they did the very best that any firm could have done in their market. If R. A. Burnett & Co., two thousand miles away, have it in their power to net the bee-keeper nearly a cent a pound more for this honey, it was probably not because R. A. B.

& Co. were more honest, but because their markets permitted them to realize better prices. We have another case where it was claimed the Chicago firm did not get as good prices on a certain lot (divided in two lots) as A. V. Bishop, of Milwaukee, and so it goes. We are quite willing to publish transactions of this kind, but we shall always feel ourselves under obligation to allow the interested parties to defend themselves.—ED.]

THOSE FENCE SEPARATORS.

The Openings Should be Large enough for the Bees to Go Through them.

BY F. A. GEMMILL.

I am not going to write much this time, but I nevertheless want to say something.

First of all, I will acknowledge the receipt of the goods ordered, including the new $3\frac{5}{8}$x5x$1\frac{1}{2}$ plain sections, and the fence separators to be used with them.

Secondly, I may state that, for material and workmanship, they are A 1, and quite satisfactory.

But, thirdly, I have a "crow to pick" with you regarding the horizontal openings in the fence separators, for the simple reason that one of the great if not *the* greatest secret in producing well-filled sections *minus* pop-holes (and I want all my sections so filled, if possible, notwithstanding any and all arguments to the contrary), is the factor of freer communication throughout the supers. To my mind, therefore, the fences sent me are no better, if as good, as a separator made of one piece, because the bees can not go through the openings; and as soon as they find they can not, they will worry themselves, and lose time in gnawing at the edges of the wood until the openings are enlarged so they can do so.

"But," you say, "if you make the openings so wide, the surface of the comb will have a ridgy appearance, and the sections can not be crated properly," etc.

Well, Mr. Root, if one can not secure the end in view without sacrificing either the beauty of the surface of the comb or the non-freedom of the bees through the super, by taking advantage of the openings referred to, then I can not help concluding that a separator made of one piece, and perforated with $\frac{5}{16}$ or $\frac{3}{8}$ holes, *a la* Pettit, will be much more preferable, even at an increased cost. One thing I do know is that the perforated dividers used and recommended by Mr. Pettit for securing well-filled sections at the sides of the super are a success, for I have tried them; and if I had my choice at a half more expense I would certainly use a separator having the perforated holes, instead of horizontal openings; in fact, I shall not use a fence at the sides of my supers, but, instead, a follower containing the $\frac{5}{16}$ holes, as stated. My reason for this is because I prefer a wider space (a full $\frac{1}{4}$ inch between the follower (or, in due deference to Mr. Pettit's wishes, I will here call it a *divider*, notwithstanding I prefer the name of perforated follower) and the side of the super than your fence affords, and must have sufficient holes large enough, and of such a shape as to give the *freest* access between the sections and the side of the hive, even when crowded.

Stratford, Ont., Can., March 28.

[I have no doubt at all that the Pettit divider, double cleated, and used in every way the same as our fence, would give good results in comb honey; but one great objection to it is that it must necessarily be much more expensive, both in construction and material, than a fence made out of scrap—such stuff as is ordinarily consigned to the boiler-furnace. If the fence will give equally good results, when *properly constructed*, then, of course, it would have the preference on account of its cheapness compared with the divider.—ED.]

THE SUNFLOWER.

BY W. K. MORRISON.

The inventors are keeping on adding to the already large number of apicultural appliances; yet the greatest want of bee-men still remains unsatisfied; namely, a good bee-plant that will insure him a good crop every year. The crop might be smaller one year than another; but what he wants is a crop of some dimensions. There are several plants that are extensively grown in Europe as field crops, such as beans, gram-peas, lentils, spurry, sainfoin, and sunflowers, and still comparatively unknown in the United States.

Is it not remarkable that all the foregoing are good honey-plants? Whatever others may do, there is no good reason why the American bee-keepers should neglect them. Every one of them is as valuable as buckwheat. Though some of the aforesaid plants may be of greater market value, this article is mainly intended to set forth the value of the sunflower as an economic crop. The expressing of oil from vegetable seeds has assumed the proportions of a national industry, especially in France; and the cotton-seed-oil business of the United States is not small; and peanut oil, too, is coming along with great rapidity. The oil-men say that they want more seeds to handle, so here is an opportunity for us to do them and ourselves a lasting good.

It is not claimed that the industry is a new one, for millions of acres are planted in Germany, Russia, and the central European States. The industry is growing; and, except for the difficulty of transporting the crop cheaply, it would soon reach very large dimensions.

I know that some have experimented with the sunflower, and dropped it. This is quite a common fate for new industries. The trouble with most experimenters in this line is to get seed suitable to their locality and the end they have in view. Especially is this true of the sunflower, for it has many species—the Jerusalem artichoke being one.

If we bee-keepers are to get any good from this plant, uses for it apart from honey-production must be found; and the rule holds good for all honey-plants except those on wastes.

The Dominion experiment farms at Ottawa have pretty well solved the matter for us, apparently, by reporting that the ordinary Russian sunflower makes good ensilage. This is good news if true. If it were some unknown plant like sacaline the seedsmen would have boomed it for all it is worth.

Here are the assets of the sunflower:

The seeds are very fattening for poultry, and a small supply every day gives a stimulus to egg-production in cool weather.

The oil is scarcely inferior to olive oil, and for salads it is superior.

The oil makes first-class soap.

The stems produce excellent fiber, chemically treated.

The seeds, roasted and ground, are a substitute for coffee.

Pigs fatten readily on the seeds alone—better than on corn.

Oilcake made from the seed after the oil has been expressed is considered by the agriculturists of Great Britain, Russia, Holland, Sweden, Denmark, and Germany, as the finest obtainable feed for cattle. This is high praise, but it is true.

In most localities it is an excellent honey-producer. Where it is not, a different kind ought to be tried. The Jerusalem artichoke is a good bee-plant, and its tubers will pay for hog-feed—the hogs will be better for it. Vilmorin, of Paris, has an improved sort for the table.

Each bushel of seed yields a gallon of oil, and 1500 lbs. of oilcake per acre is obtained. The sunflower is exhaustive to the soil, but wheat produces extra well after it. It enables the farmer to rotate his crops more, and gives him another string to his bow, more especially if he is a stockman.

The white-seeded variety is best for oil; the big black Russian sort for poultry and cattle feeding; but *Helianthus Indicus* is the most profitable for general cultivation. It is a dwarf species.

It is imperative that the seeds be cleaned at once with a fan-mill, and *kept dry;* if not, they will mold. I think it worth while for bee-keepers to experiment a little in this line, if only to induce their neighbors to take up the business.

Haage and Schmidt, Erfurt, Germany, have good seed, and could probably give more particulars in regard to European methods, but cheap cultivation is what is chiefly wanted.

Devonshire, Bermuda.

[The above article gives us a pretty fair glimpse of friend Morrison. His ideas seem to spread and scatter over the whole face of the earth. I do not know that I ever met a man before who had such knowledge of foreign countries and their special industries as friend M. There has been a good deal of complaint in the United States that sunflowers would not yield honey. From the above it would seem that it is because we do not have the right kind of sunflowers. Now, shall we not have one or more of our experiment stations make a practical test of the different varieties of sunflowers known, all the way from artichokes to Mammoth Russian? And, by the way, I think there is somewhere in the Patent Office an arrangement for making a fence—yes, a substantial fence that will stand several years, at least so the inventor claims—all of *sunflowers.*—A. I. R.]

HOW BEES WORK IN THE DARK, ETC.

An Interesting and Valuable Article.

BY E. S. ARWINE.

In March 15th GLEANINGS is reproduced an article from the *British Bee Journal*, on how bees work in the dark and see in the light without inconvenience. If our editor will take a run to a blind-asylum, and see how the little sightless children do fancy work, especially with small beads of various colors, and try how much longer it will take him to separate, with both fingers and eyes, a tablespoonful of mixed colored beads than it does one of those hapless children, he will get a slight inkling of how bees do fancy work in the dark. It is not by sight nor Rœntgen rays, but by the sense of touch, entirely. So far as comb-building is concerned, the bees are probably, to all intents and purposes, as blind as the patients in the asylum, through whose optic nerves no ray of light has ever penetrated the darkness that envelops the brain. If it is by Rœntgen rays, why do queens always poke their heads into the cells and feel the bottom to know that all is right before depositing the egg? If it is not touch, why not just take a Rœntgen peep, deposit her egg, and pass on? Science will probably demonstrate the fact that bees have a set of eyes that can look at the most intense light without any inconvenience, while other eye-facets see only at short range.

As to the queen laying on the exact opposite sides of the comb, it is the instinct of motherhood securing the best possible condition for the safe propagation of the young. Instinct is the sense which causes an animal to take unerringly a straight course to the place of its former abode regardless of the route it may have traveled.

This instinctive sense is what Adam used when he named the animals in the garden of Eden and "lost in the Fall." Instinct should be called intuitive sense, the latter term being more accurate. Reason is not as accurate a sense as intuition had it never been marred by the Fall. When Eve began to reason about the forbidden fruit she was deceived, and the fall of man, with all its attendant woes, was consummated, even to Gethsemane and Calvary, where the Son of God died to redeem us from sin, which resulted from reasoning away a holy law; and men are still reasoning themselves into the lake that burneth with fire and brimstone. Adam was not deceived, but chose to eat, and share the lot of his deceived companion.

If any of your readers wish to Rœntgenize the hive, let them do so; but if they are scientifically qualified to make accurate observations they will ultimately find they are trailing the wrong coon. They had better spend their time in investigating the sense of touch, which is a very delicate sense, or force, and is beautifully illustrated by the inmates of the blind-asylums.

Hold your breath, Mr. Editor, while I announce that sound and light will, in the near future, be recognized as forces (especially sound), and not, as now held to be, ethereal waves, as now thought, just as electricity is now known to be force, and not fluid, as it was thought to be only a few years ago. A trained hand can often feel a sound when transmitted through a dense medium. If you dissent from this position, let your footnotes answer these questions:

What causes light to pass through several inches of glass, and be stopped or turned back by an inch board of porous wood? Can the subtile ether more easily penetrate dense glass than porous wood? Why will not ether carry light through sheet iron as well as through a foot of glass? Absorbs it? Yes. How long will it take to get so full of ether-waves that it will glow like phosphorus in the dark? If they are forces we have this solution: As glass is a non-conductor of electricity, and asbestos of heat, so wood and iron are non-conductors of light, while glass is, perhaps, its best conductor, air excepted. Iron, being a non-conductor of light, is an excellent conductor of the forces of sound and electricity.

I was led to these conclusions by being able to feel sounds with my hand when I was actively practicing medicine. I could almost as accurately diagnose bronchitis by my hand laid flat on the thorax as I could with the stethoscope. Again, if light and sound are ethereal waves, why should light travel millions of miles in a minute, while sound would be many hours traveling that distance? Surely, the discharge of a cannon would give a greater impetus than the feeble rays of a tallow dip; yet the one could be seen a long distance much quicker than the other could be heard; thus air is a much better conductor of light than of sound. The telephone demonstrates that sound is more rapidly transmitted through wire than is electricity, the former being instantaneous for miles, while the latter is not instantaneous.

That's right; thrash Dr. Miller with that bundle of straw until his preaching and practice agree. Hit him again, Dr. Miller. Have the finger point to the side of wagon, and save breakage. I have peddled honey considerably from a wagon, and have learned a thing or two when I can think of them.

I'd like to see Hasty and A. B. Gill, of Paso Robles, eat honey on a race. I would furnish the honey to see the fun. Gill can get away with a pound at a sitting; but how long he could hold out at that rate I do not know—perhaps a month or two.

Dove, Cal., April 4.

[Your science, theory, and practice are all right, save in the reference to the telephone. I have made telephones, acoustic and electrical, a special study, and your statement to the effect that "sound is more rapidly transmitted through a wire than electricity" is erroneous, or else the theory and practice of the Bell telephone is all wrong, if I understand you. As I understand it, it is this way: The voice acts sometimes on an electro-magnet—more often on a microphone—which in turn causes an intermittent current of electricity to act on an electro-magnet at the "other end of the line." This magnet in the "receiver" causes the diaphragm (or armature) to vibrate in such a way as to reproduce *similar* sound-waves (but not the same) as those spoken at the other end, even though thousands of miles away. That is to say, sound does not travel over the wire of an electric phone at all. It simply acts on the head or mouth-piece, causing certain vibrations. These are reproduced by electricity (another and distinct force) in the receiver at the other end. In a certain sense, sound travels over the wire of an acoustic phone but very imperfectly. I don't pretend to be "up" on the other sciences; but all that Mr. Arwine says sounds reasonable, and, so far as I know, is quite within the range of practice. Indeed, I believe it the best article we have ever received on the subject.—ED.]

* * *

FORECASTS OF THE HONEY SEASON.

How does it Affect Market Prices on Honey?

BY C. DAVENPORT.

If GLEANINGS did not have the reputation it has for fair play by allowing everybody in our ranks to express his opinion on all matters relating to our pursuit I should hesitate to criticise its policy of estimating such large honey crops before such is actually assured. I think there is little question that the estimates and reports of large or very large expected crops in the different bee-papers have done considerable to lower the price during the last two years. Of course, bee-keepers themselves are mostly to blame for this by sending in such glowing reports. Still, the editorials on the matter, as a rule, seem to overlook the fact that many—in fact, I think I may say most — of these reports on which such large estimates of the crops have been made the last two years were sent in by beginners or by those who had but a small number of colonies, and on these accounts were not competent authority. GLEANINGS, though, on account of its connection with or intimate knowledge of the affairs of a great manufactory which has distributing-points all over the United States, has, of course, other ways of forming an estimate of the crop by the amount of supplies manufactured or actually sent out to the producers; still, this does not give an accurate means of estimating the crop; for no bee-keeper, when ordering supplies, can tell with any certainty whether they will be needed that season or for a number of years to come. Besides, this is a big country, and the manufacture of supplies at the present time is in the hands of or controlled by but few factories, comparatively speaking; and on this account if they do a large business, and even run night and day for a while, it may not mean any thing abnormally large in the honey crop.

I am by no means alone in my opinion on these matters, for last fall I traveled to some extent in this and two adjoining States, and found some (one party in particular) who felt very bitter against GLEANINGS. He said it was doing what it could to lower the price of honey, so they could buy it cheaper. I convinced him that he was entirely mistaken in this by explaining that the firm that GLEANINGS represents handles honey on a very close margin, and would not make any more on an amount bought cheap than they would if a fair price had been paid, and that the honey they buy is a mere bagatelle compared with their other interests; and, laying aside all considerations except mercenary ones, GLEANINGS and those connected with it would have no desire to lower the price of honey, as their own success depended upon the same, for bee-keepers as a whole. I believe, and so do a number of others with whom I have discussed the matter, that The A. I. Root Co. is doing a great deal of good to producers as a whole by buying honey; for, owing to reasons which it is not necessary for me to take space to explain, they have a larger or more generally known reputation for square dealing than (I think I am safe in saying) any other firm in the United States that handles honey in a large way, and undoubtedly many buy of them who would hesitate to order from a less well-known firm.

Southern Minn., April 27.

[Yes, indeed, GLEANINGS has tried to earn a reputation for fair play for both sides. While its editor has certain opinions, he is always desirous of having the opinions of others in his columns, even though those opinions are diametrically opposite his own. But he does not invite discussion for the sake of it, nor that sort of discussion where one side delights in inserting stings into the epidermis of the other side. Some of my best friends are those who differ with me politically and religiously as well as on certain issues relating to our pursuit. I love them more because of their honest differences, and because they are fair and honest enough to give me credit for holding an equally honest opinion.

Now with regard to forecasts of the season. Last year I plead guilty to the mild insinuation; but this year I made a resolve that I should not be guilty of prematurely forecasting the season. I can not imagine to what our friend is referring unless it is notices from our business manager to the effect that we are running night and day, and can not keep up with orders. Indirectly this would imply that bee-keepers all over the United States are expecting a tremendous honey-flow. But this is not the case; for the fact is, last year used up the supplies that were on hand; and as bee-keepers had cleaned out their stock, which they had not done for several years preceding, they wanted more. Now, to offset the possible implication that this year was going to be a tremendous honey year, in our issue for April 1 I gave expression to these words:

> What's the matter with bee-keepers this year, that they are going in so heavily for supplies? Beyond the fact that bees have wintered well, there is no indication that the season will prove to be any thing remarkable.

I think now exactly as I thought then; and I will say further, that, one or two seasons when there has been a great rush for supplies, there has been subsequently an indifferent honey-flow. In consideration of the fact that all the factories have been running full time, and some night and day, like ourselves, it would seem as if supplies enough had been made to last all the bee-keepers of the United States two good seasons.—ED.]

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE

BEES KILLING A QUEEN.

Question.—As I was handling a colony of bees the other day the queen fell off the comb down on the enameled cloth, when I picked her up and put her on top of the frames in the hive. The bees immediately rushed on her and killed her. How is this to be accounted for?

Answer. — Bees will sometimes attack a queen that they have cherished for months as their mother, if she, for any reason, becomes frightened, thus running around and acting like a stranger. Especially is this true in early spring, as the bees seem to "guard their queen with a jealous eye" to a greater extent when colonies are just set out of the cellar, or are having their first flight in spring, than at any other time of the year. For this reason I handle bees as little as possible till brood-rearing becomes well established, when the bees rarely pay any special attention to their queen while the combs are being looked over. When it was necessary to handle frames on account of light stores, dead bees having accumulated on the bottom-board, or to find out whether the colony has any queen at all, I have often found the queen balled as soon as I came to where she was on the comb; and if not, then the bees would form a knot over her immediately on the light striking the comb when it was turned up so as to see her majesty. But it is not often that any queen is killed, as was the one the questioner tells about, unless she is handled, or robber bees come hovering around while the combs are being handled. When robber bees so hover around as to annoy the colony, the bees become jealous at once regarding their queen, and when in such a state they are very apt to place on her the blame for the disagreeableness caused by the opening of the hive, when they will ball and sting her, though the cases where they mete out so severe a punishment are rare. They will more often hug her till the robber nuisance is past, when they will let her go about her work again.

Years ago Mr. D. A. Jones asserted that the motions or actions of a queen are often what govern the treatment of the bees toward her, and I am quite inclined to think he was partially or wholly right. In the above case the queen was undoubtedly frightened by her fall and from being picked up, and so ran into the hive pellmell; which was not the way the bees were used to seeing their own mother act, so they concluded her to be a stranger, and rushed upon her, fearing she might be the means of killing their own mother, for they had not so far missed their mother's presence. Then she was found where the bees did not expect her to be, and this gave evidence to them that she was an intruder. Then, lastly, the queen probably had acquired a foreign scent by being picked up with the hand, so the smell was not like that of their mother's, and this alone often causes the bees to treat their own queen as they would a stranger. In circumstances like the one described, I always pick up something like an entrance-block, spear of grass, or weed-stalk, etc., allowing the queen to run on it, when it is held near the center of any comb, having brood in it, when the queen, attracted by her subjects, will walk off on the brood, and in nine cases out of ten appear at home at once, as she is now where she was before the hive was disturbed.

QUEENS BEGINNING TO LAY.

Question.—About how long after emerging from the cell before the queen goes out to meet the drone? How long after mating before she begins to lay? What I really wish to know is, how long a time must elapse between the time the first or prime swarm issues from the parent colony, and the time the young queen begins to lay. By knowing this, it will help me much in ascertaining whether each hive that sends out a swarm has a laying queen later on.

Answer.—In the above we have something which is very often overlooked by very many bee-keepers, and thus colonies are allowed to go without a queen till laying workers appear, or the colony dwindles down to where robber bees take away all the honey the hive contains. As a rule, the time from the issuing of the first swarm to the time the first young queen emerges from her cell, is seven days. Then, if after-swarming is allowed, it will be all the way from four to eight days before a young queen becomes established in the hive, over her rivals, and this established queen may be only one or two days old when thus established. As a rule, queens which have their own way fly out to meet the drone when from five to seven days old, so it may be five or six days after such queen is established before she mates. Then there is a period of from two to three days after mating before she begins to lay. Hence when after-swarming is allowed it will often be 24 days before the queen commences to lay, and it is useless to look in such (after-swarming) hives any sooner than this. Then if you look when the queen has been laying only a few hours, the eggs will be so "few and far between" that it will bother you to find them; hence I always consider it good policy to wait 27 days, at which time young larvæ should begin to appear, which, together with eggs in several combs, tells you, generally, upon the lifting of the first center comb of the hive, that a "young queen is there all right." If no eggs or larvæ are found, a frame of brood should be immediately given, when you will look again in 48 hours to see if queen-cells are being started. If so, then the colony should be given a laying queen at once, or, if this is impossible, two or three frames of brood should be given them, else they dwindle to where they will be of little value before any young bees will hatch from a queen they may raise from the brood given. But suppose after-swarming is not allowed, then we have seven days to the time the first young queen emerges from her cell, seven days to the time she flies to meet the drone, and three days to the time she begins to lay, this making 17 days as the shortest time any young queen is likely to be found laying from the time the prime swarm issues. Then I would wait three or four days more till eggs and larvæ might become abundant in the combs, so I could expect to ascertain what I wished to know on lifting only one or two combs. My practice is to look for eggs and larvæ on the 23d day from time of swarming, where no after-swarms are allowed, or on the 27th day where such swarming is allowed. But, more often still, I do not look into any hive at all of late years, as years of looking at the way the bees act at the entrance and in the sections has enabled me to tell at a glance along about the date named, whether the colonies have laying queens or not. When you find a colony that does not have a laying queen the 25th day after the first swarm issues, just watch the bees in their actions at the entrance, and compare their actions with one you know has a queen which has been laying two or three days. Then look at the work, or "non-work," going on in the sections of the two hives; and if you are a careful observer you will ever afterward be pretty sure regarding this matter without ever even opening a hive; in fact, so sure that you will very likely express yourself to others in the matter very much as did the negro editor of that Texas paper, who considered words inadequate when he "boomed" John D. McCall for the mayoralty in this unique style: "Mr. McCall is eminently a pious man, honest as the days are long; certainly he never embellishes meager conceptions with a dazzling trope, nor uses fine words to conceal poverty of sense, but, honest to express his conviction, his congeniality, like a brook in the leafy month of June, takes no pains to woo your eye or ear to its musical and sparkling waters; but, come when you will come, in serene weather or in cloudy days, daytime or nighttime, it murmurs sweetly as it goes; break on it in the thicket, cross it in the meadow, it welcomes you with the same pleasing note; flowing it sings, and singing it flows; and his piety gives the sweetness of its tone to his life and character. These metaphorical illustrations are but faint ideas of the greatness of our subject."

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE APIARIAN EXHIBIT AT THE TRANS-MISSISSIPPI EXPOSITION.

Friend Root:—The apiary building at the Trans-Mississippi Exposition is now nearing completion, and its interior arrangement will excel any thing ever before dedicated to the exclusive use of bee-keepers. The building is 128x75 feet, designed after Swiss or German architecture, with ample entrance and exit. Its interior arrangement, with the operating-rooms for filling exhibition jars, and for reliquefying honey, is most complete. The exhibition-cases for honey extend the full length of the building on either side; are four feet deep, with glass tops, and when the exhibits are in place they will be as attractive from the outside as inside; and the visitor passing by will be attracted to the inside in order to see the wonderful exhibits of this industry. The center will be devoted to the exhibition of supplies, and for such exhibitors as desire to erect their own cases. Every thing in honey and supplies has been listed for award, so that, when the jury of award passes on these exhibits, any meritorious article will receive its reward.

Opportunities will be left open as long as possible prior to the opening, for such States as are desirous of making exhibits, to come in and get in place prior to June 1st. Douglas County, in which Omaha is located, has taken 300 feet of space, and, under the supervision of Mr. Auc. C. Davidson, Vice-president of the Nebraska Bee-keepers' Association, will show what one single county of Nebraska can do by way of showing up its honey industry. Outside of Douglas County the State will occupy about 500 feet of space. Other States are taking a proportionate space, and at this time the bee and honey exhibit bids fair to meet the most sanguine expectations of its projectors.

For several days Mrs. Whitcomb has been engaged in preparing an exhibit in beeswax, which will outstrip any thing before exhibited in this line, and must, like the exhibition, be seen to be fully appreciated. The coming meeting of the U. S. B. K. A. should be located at Omaha without farther delay, where the brethren can view the exposition and attend this meeting at the same time, and where as low rates are assured as to any other point, and where the meeting is not liable to become lost amid the hurrah of war and an old-soldiers' reunion. E. WHITCOMB.

Friend, Neb., April 28.

THE PLAIN SECTION AND THE BETSINGER WIRE-CLOTH SEPARATOR OF 20 YEARS AGO.

At the present time a great deal of interest is taken in separators with bee-passages through them, and in plain sections. This interest is likely to continue for at least some time to come. Since you take the front rank in finding out new ideas and improvements in bee culture I would suggest that you hunt up the "Betsinger Perfection bee-hive." The important part was the supers, which took 28 plain sections. The sections rested on metal supports that were placed crosswise of the supers. On the tops of the supports were metal projections to align the sections. At the ends of the supers were thumbscrews to give end pressure to each row of sections. The separators were fixed permanently in the super between each row of sections. They were made of wire netting or cloth, and tin bound, and the meshes of the wire cloth were large enough for a worker to pass through. I know from practical experience that woven-wire fencing is better than board fencing, and it may be possible that woven-wire separators are better than the "fence" separators, if properly made. The wire of which the separators are made should be very fine, and as strong and tough as possible, and the separators should be held taut by end elastic tension. The arrangement was invented about fifteen years ago, and was described and offered for sale by Mr. F. A. Salisbury, of Syracuse, N. Y., in his catalog of bee-keepers' supplies for 1887. Mr. Salisbury, I presume, can give you all the information you may want in regard to the hive. I should like to know how the veteran bee-keepers of New York handle the frames of standing-frame hives without pinching bees, and do it quickly. Did not Mr. Ernest R. Root tell how it was done when he wrote for GLEANINGS a series of articles on his trip through that State among bee-keepers? If so, have you any copies left of the proper numbers? E. A. DAGGITT.

White House Station, N. J.

[Yes, I well remember when Mr. Betsinger put out the Betsinger Perfection bee-hive and his wire-cloth separators, but I do not remember that any one found such separators very desirable, even if we throw out of account entirely their great expense. At the time, it was reported, I think, that the bees would sometimes build their combs clear through the wire cloth as if it were not there at all, and cap said comb on the other side of the cloth. Such separators seemingly did not offer enough barrier to keep the bees within limits in their comb-building; and, if I remember correctly, they were abandoned for that reason.—ED.]

EDITORIAL COMMENTS; A NEW DEPARTMENT ASKED FOR.

Mr. Editor:—I have a few heads of grain to help fill your measure. I fully agree with W. Z. in regard to editor's comments. They are clear cream skimmed from letters far and wide. I consider the different departments in GLEANINGS first-class; but there is one lacking which should be named "Asylum," to be used for the benefit of those with empty craniums, who prefer their grandfathers' cleats to a nice handhole on each side and end, and those who are opposed to plain sections and fence; also those who condemn T tins. Mr. Editor, should you start such a department, please put Dr. C. C. at the head.

Ventilation should be given at the entrance in raising comb honey, as it will go further in preventing swarming and clustering out, also causing the heat to rise to the sections where needed to ripen honey.

Stop my Gleanings! page 311 sounds similar to a command in the U. S. army. The writer may find a good bee-journal, but has lost a good one. I never understood the editor would give lessons in running a brewery, but in bee-keeping. The ring of the correspondent's letter caused me to think a glass of metheglin was taken before writing.

Now one crack at A. I. R. Please read page 25; and if he intends to advocate the use of tobacco dust, as on page 324, tell what will be done with the rest, and prepare a peep-hole to squirm out. C. R. Morts.

Mohawk, N. Y.

INCREASING THE SIZE OF BEES BY INCREASING THE SIZE OF CELLS IN FOUNDATION.

Could we not increase the size of bees by enlarging the foundation gradually? I notice in very old swarms, when the brood-comb becomes thick and cells small, we have smaller bees. A neighbor has several old swarms of black bees. The bees look very small beside the Italians I have. You have had more experience with bees than most of the bee-men. Do you know of its ever being tried, and what do you think about it? if it is worth the trouble to try it, could you furnish the foundation? M. Kinney.

Putnam, Conn.

[While it is true that smaller bees are reared in smaller cells, the plan does not work the other way. Worker-cells should run a trifle over five to the inch. If they were put half way between worker and drone, I doubt very much whether the bees would breed in them at all. Indeed, one of our customers orders comb-foundation machines that will make foundation having cells a medium between drone and worker. He says the bees will be less apt to use it for breeding-purposes, either drones or workers, because it is neither one thing nor the other. His idea is to use it exclusively for foundation in sections.—Ed.

THE FENCE AND PLAIN SECTION 38 YEARS OLD; FOUND TO BE SATISFACTORY.

I see in your catalog you state that the separator, which you style the "fence," is not a new idea, but has been used some seven or eight years. During the year 1860 I bought of Richard Colvin, of Baltimore, two Langstroth hives in which this style of separator was used in the supers. The sections were made of ⅛-inch stuff, and were 1½x4¼x8¼ inches. The supers held 16 of these sections—2 in a row and 8 rows—if I remember correctly. The sections were placed in a frame, similar to your shallow extracting-frame, which was suspended in the super, with the fence separator between each.

I used the Colvin plan for surplus comb honey up to the time when the present sections came into use, and found it satisfactory.

Cumberland, Md. J. B. Widener.

CHERRIES CANNED IN HONEY.

Five pints stoned cherries and one pint extracted honey. This makes one and a half quarts.

GOOSEBERRIES CANNED IN HONEY.

Four pints gooseberries and two pints cold water. Cook slowly until partly done, then add one and a half pints extracted honey, and cook till done.

HONEY NUT CANDY.

Use the recipe given in honey-leaflet for honey caramels, cooking till it hardens in cold water, then pour over nut-meats. When cold, break in pieces. Mrs. R. C. Aikin.

Loveland, Col.

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

J. W. B., Texas.—I can not understand why you should have trouble with yellow-jackets. I never heard of a case before where they were so destructive as to make away with whole colonies. As I am not up on the yellow-jacket question, I will refer you to Prof. A. J. Cook, Pomona College, Cal.

J. M. H., Ga.—You will do much to prevent honey from granulating by bringing it to a temperature of about 180 degrees Fahrenheit, and sealing it while hot in glass jars or fruit-cans. Honey should not be heated above 180, usually, as it will destroy its delicate flavor. Your method of hiving swarms with clipped queens is much like that employed by a good many other bee-keepers.

L. L., I. T.—There is no danger of the queen's getting out of the front of the hive having one of the self-hivers mentioned in our A B C of Bee Culture, providing you follow the directions, or use the self-hivers exactly as they are constructed. But we do not advise any one to put very much faith or money in these devices. Better get the colony so strong that there will be no desire on their part to swarm. To do that it may be necessary to give two L. brood-chambers.

M. S. G., Ind.—In a case where we use two brood-chambers, as mentioned recently in Gleanings, in order to get large colonies and do away with swarming, we have only one queen, but she is a good one. We use no perforated zinc between the chambers, as that would defeat the very object we aim to secure; namely, the avoidance of swarms. If the brood is confined entirely in one hive, in my experience the bees are more inclined to swarm; but if there is brood in both chambers they will settle down to business and pile in the honey, both in the brood-chamber and in the supers.

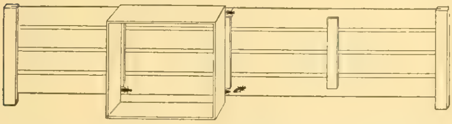
EDITORIAL BY E. R. ROOT

THE subject-matter of our "Honey-Leaflet" is gotten out in more elaborate form by R. K. & J. C. Frisbee, Denver, Colorado, for their special trade. It is neatly bound in a cover, decorated colors. Besides the special matter of our leaflet, it contains other items relating to honey, of special interest to the consumer. That's right; keep the ball a rolling—that is, the truth about honey constantly circulating.

UP till within a few days there has been no late work in German on the subject of bees, especially adapted to American bee-keeping. Mr. J. F. Eggers, of Grand Island, Neb., an intelligent and progressive bee-keeper, has just published a small work that will "fill a long-felt want," entitled "Bienenzucht und Honiggewinnung." Of course, nearly all *progressive* Germans of this country read English to a greater or less extent; but I've noticed all the same that all "Dutchmen" like to talk and read in their own mother-tongue when they can do it just as well. Well, this new book contains 51 pages, and is thoroughly up to date in every particular. The manuscript, before publication, was reviewed by Friedemann Greiner, a bee-keeper who is exceptionally well posted regarding all developments, both in America and in his "Fatherland." He pronounced the subject-matter orthodox and up to date. As the demand will be limited, of course, to German readers, the price will necessarily have to be higher than a similar work of this kind in English. It will be sent from this office for 50 cents, postpaid, or from the publisher, as above.

CONTINUOUS PASSAGEWAYS IN THE FENCE.

ALONG when we first introduced the fence, quite a number of inquiries came in, asking why the cleats were dropped down a little from the top edge of the top slat. The purpose of this was to give side passageways between the slats and the edges of the plain sections. After we had sent out a few thousand fences thus, we decided to shorten them at the bottom in the same way. The illustration below shows the fence we have been sending out to the great bulk of our trade for 1898.



The real reason for having the cleats shorter than the width of the fence proper will be made more apparent from the illustration. The object of giving the bees side passageways is, of course, to give better filling to the sections. I do not wish to go on record at this time as stating that these side passageways will positively bring about this result; but if the experiments of Mr. Danzenbaker, in his open-corner sections, which we sold a year or so ago, and if the statements and observations of that prominent bee-keeper, Mr. L. A. Aspinwall, of Jackson, Mich., mean any thing, these side passageways will probably do much to bring about a plumper and better filling of the sections.

But suppose there should be some, like Doolittle, who do not want their sections filled out as plump, but would like to have them the same as the average sections on the market. All we should have to do would be to lengthen out the cleats to the height of the section, and then, instead of having a series of slats, use only one wide slat or strip of veneering wood nearly of the depth of the section. This would secure for the plain section the same sort of filling we now have in the old bee-way sections, because the conditions would then be the same.

BIOGRAPHICAL SKETCHES — WHAT SHOULD THEY TEACH?

ONCE in a while I see in some of our exchanges pictures of unknown bee-keepers who have attained no special success in the line of bees. Occasionally biographies and photos of some bee-keepers are sent us of whom I never heard before, much less do I know of their having distinguished themselves in any particular line. I feel that it is a duty we owe to our readers to give biographies only of prominent bee-keepers, or of those who, though less prominent, have been especially successful in some one feature or department of bee-keeping. Let me illustrate.

Mr. Miles Morton, outside of his own immediate vicinity around Groton, N. Y., was scarcely known; but when I visited him I found that he had a surplus arrangement and a form of separator that enabled him to put out section honey that would bring a higher price than that produced in the ordinary supers.

A little later I gave you a look at the face of that honest sturdy bee-keeper, Mr. Dan White, the man who knows how to sell honey at a high price—yes, knows how to peddle it without losing his dignity or self-respect.

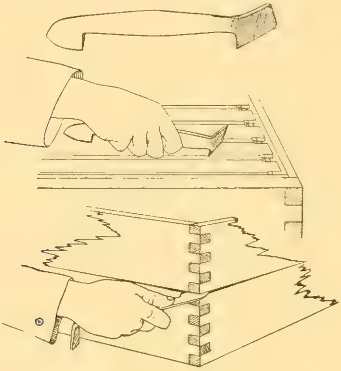
And, again, some little time ago I showed you the face of Mr. Merton Chase, of Whittlesey, O., another bee-keeper comparatively unknown to the outside world. Why did I give him such prominence? Because he always gets some honey every season whether any one else in his vicinity does or not, and because he always has the first honey on the market, and because his honey is always A No. 1.

In this issue I take special pleasure in introducing my old friend Chalon Fowls, of Oberlin, O. Why he deserves special distinction is because he knows how to get double prices on his honey—not by trickery but by selling honest goods that have a reputation for purity backed by his own good name.

In giving you occasional biographical sketches of bee-keepers who have distinguished themselves in some special line of beekeeping, I do not seek to bolster up their vanity, if they have any, but to give our subscribers something of real merit in their special work.

A HANDY TOOL FOR THE APIARY.

FOR a year or so back I have felt that we ought to list some sort of tool especially adapted for prying supers apart, for separating Hoffman or other fixed frames, and for scraping propolis or wax off from the top-bars. While I was at the Buffalo convention, Mr. George Conrad, of Lynn, Pa., showed me a tool from which he had derived a great deal of satisfaction. The illustration below will make its manner of usage apparent at a glance.



I have for several years used a large screwdriver; but one objection to it is that the blade is too narrow, and too thick and blunt. I have seen the time when I have had, by main strength, to force the point of the screwdriver between two supers to separate them; and even then I have had to exert a considerable pry to bring them actually apart. The operation of separating the supers was not so bad as the mutilation of the edges of the super or hive. Quite a number of hives at our outyard show screwdriver marks; and I imagine that, in time, these marks would become deep enough to let in robbers, especially if the super and hive did not fit squarely together. Our apiarist uses a strong putty-knife, the blade of which has been cut down to half its length to get strength for prying. This has the advantage of a broad thin blade that will not mar hive edges. But my objection is that such a blade is not stiff enough to stand a good pry.

Mr. Conrad has got the right idea of a pry. It is made of tool steel forged out by hand. The upper end, or that edge, rather, that represents what may be called the ax or hatchet end, is thinned down to a broad knife edge. This edge is crowded between the supers as shown in the cut, and a slight twist breaks the connection. The other end may be used for scraping or prying, as the case may be.

I am not sure that Mr. Conrad has the best form of implement. In my mind's eye I see what to my notion would be an improvement. In fact, it is the identical tool that neighbor Shane used years ago, and which I have tried and found to be very handy and serviceable. I'll have a picture made of it shortly.

I know this seems like a small matter; but a really good, handy serviceable tool would be worth bushels of putty-knives, screwdrivers, jack-knives, and, in fact, any other form of tool made for another purpose. It should be made of the finest grade of steel—something that will permit of a thin broad edge for prying, and yet that will not bend or snap. If we can only get hold of the right form of tool we will see that the right kind of steel is secured.

"SUCCESSFUL METHODS FOR REARING QUEEN-BEES"

is the title of a new pamphlet just gotten out by Henry Alley, of Wenham, Mass. While it contains only 20 pages of reading-matter, it is the boiled-down experience of a veteran queen-breeder covering a period of thirty years. Some of the methods are the same as those given in his former works, particularly that wherein he destroys every other egg and forces the bees to build cells over the remaining eggs. But the part that seems to be particularly new is where he says that, with an ordinary colony, he can raise cells, even with the queen present. In a nutshell the scheme is this:

> Cut out the bottom half of the comb of a standard frame, and insert a bar ¾ inch thick, by ⅞ inch wide. This is nailed in a frame directly under the comb. On one side of the frame there is nailed a piece of perforated metal large enough to cover the space where the comb was cut out. The metal is nailed firmly to the middle and bottom bars of the frame. On the other side the metal is arranged to serve as a door so that the room under the middle bar can be utilized for fastening the little strips of comb containing the eggs for cell-cups. The metal door is put in place to keep the queen from the cell-cups. If the queen has access to them she most likely would destroy them, and no queens would be reared.

A little further on he speaks about giving cell-cups. It would appear to me the bees would not build cells off from comb treated as given in the extract above, although they might finish *cell-cups* inclosed in perforated metal such as Mr. Alley describes; so I take it that cell-cups is what he refers to. The price of the book is 25 cents, and can be obtained of the publisher as above.

TWO-STORY LANGSTROTH COLONIES FOR COMB HONEY; SEASONABLE AND IMPORTANT SUGGESTIONS.

THERE has been much inquiry of late regarding the double-brood-chamber method of preventing swarming when working for comb honey. Although I have covered the ground pretty well it now occurs to me that I have left out one or two important points, and perhaps others should be emphasized.

The two-brood-chamber plan will not work unless the colony is strong enough to fill both bodies *full of bees*. This part is very important. Putting on an extra chamber during the time honey comes in will only result in all the honey going into the upper story. This, of course, will have to be filled before the bees will store in a comb-honey super. The time to double up the colonies is *now*. Get them fairly boiling over with bees in two-story hives. If brood is pretty well scattered in both chambers there will be but little swarming, and the honey will very soon be put into the comb-honey supers. Unless you can succeed in getting both brood-chambers crammed full, better remove one of them just as honey is coming in, and put on two comb-honey supers instead. This may result in swarming, but you will get some honey. The advantage of the double chamber is that it almost entirely does away with swarming, and still comb honey can be secured. Don't forget that you must have a good queen, and both stories crammed with bees and brood in *before* the honey-flow.

I don't say that the plan will work for all localities, but it works tiptop here.

MANAGER SECOR AS AN ARBITRATOR.

SOME time ago I referred a difficulty between a bee-keeper and a commission house to the manager of the U. S. B. K. U. The case was a particularly difficult one, especially one where collection seemed well nigh out of the question. As a last resort, and with a feeling, I must confess, that nobody could do any thing, I referred the matter to the Manager of the U. S. B. K. U., Eugene Secor. The commission house in question does a large business in one of our large cities. For certain irregularities we never admitted their quotations. Well, what was my surprise when I found that Mr. Secor had actually compelled them to pay up! and the bee-keeper who, I think, had also given up his case, was so pleased that he turned in $2.00 to the Union for payment of membership in advance, saying that, if that was the way the Union was going to champion the rights of members, he was going to support it.

Manager Secor is a good arbitrator; and if he could bring about a satisfactory settlement in a case that seemed practically hopeless, as was the above, he is a captain.

For years back we have been acting as third party, or arbitrator, between commission men and bee-keepers; but on many accounts the Union can and should do far better work, and at the same time bring to bear its moral prestige and strength; and I would suggest, therefore, that in future all cases be turned over to General Manager Secor, of Forest City, Iowa, for I am sure he will handle them with discretion and ability. But there is one thing you must not forget to do, and that is to become a member of the Union before you get into trouble. It is hardly fair to expect that the Union would come to your support if you are not already a member.

Every one of our subscribers ought to be allied at once to this organization that stands for the best interests of the bee-keeper and the championship of his rights. Do not wait till you forget about it, but plank down your dollar at once. Members of the Union can have GLEANINGS for 75 cts., and, if I am correct, the other journals give special rates likewise. These and other benefits ought to make membership worth many times its cost.

FOUNDATION 18 FEET TO THE POUND.

THE first mill for turning out this product, which I mentioned on page 312, was not exactly according to Mr. Weed's notion, and he accordingly went to work and made another, incorporating a new feature, and with rolls *six inches* in diameter instead of four, and involving entirely new principles of construction. The machine is not yet hitched on to steam power, but from preliminary tests we have made by hand it looks as if we would be able to turn out a product that for lightness (18 ft. to the lb.), and thinness of base (from 3 to 4 one-thousandths inch thick) that will excel any thing heretofore put on the market. When it is remembered that the bees make the bottoms of their cells only $\frac{3}{1000}$ thick, or about that, it will be seen we have approached Nature itself. But this mill runs the wax out just the *opposite* of what is done on ordinary rolls; that is to say, the sheets will have to hang with the parallel sides of the cell-walls parallel to the line of support. By a special construction of the cell-walls and an arrangement of the die-faces Mr. Weed confidently expects (and preliminary tests have led us to think he is right) that the resultant product, 18 feet to the pound, when hung as it should be in the hive, will actually stretch less than the article measuring 13 feet to the pound, heretofore sold. And this is not all. There will probably be no more fishbone in comb honey built from this new article than from that built wholly by the bees, and worker comb at that. I do not want to go on record as saying that *both* of these results will be accomplished beyond a doubt. Tests this summer will have to prove that.

We hope to be able within a week to supply this new foundation at 75 cts. a pound in lots of one and two pounds, and possibly larger quantities, providing machinery now in process of construction for driving such large rolls works all right, as we can not very well supply it in quantity and turn the new mill by crank. And the price will be less, probably, after we get through "experimenting." Don't expect prompt shipment if you order this foundation with *other goods*.

Mr. Weed, who is now in Cleveland, wishes me to say that his dies for drawn foundation are progressing finely, and he hopes to have the new product, with natural bases, ready to deliver soon.

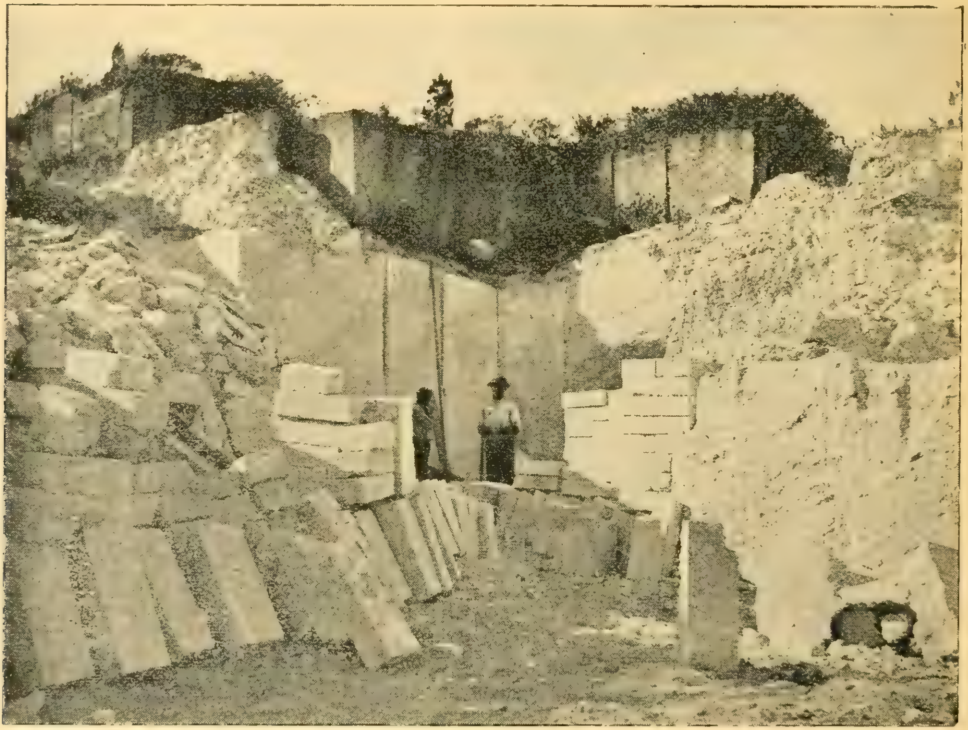
FRUIT-BLOOM.

FRUIT-BLOOM in this locality has been more profuse, and made more of a showing in the hives, than it has done for several years past. Reports over the country seem to indicate the same thing. This means, if it means any thing, lots of brood-rearing, and strong colonies ready for the main honey-flow in the latter part of June or fore part of July. All this looks very hopeful; but I have not forgotten how in former years we have had the same favorable conditions, and yet practically no honey at the time when it usually comes. This was true in some localities last year, and more true in many localities the year before.

NOTES OF TRAVEL

BY A. I. ROOT.

I have before mentioned the beautiful roads for wheeling in Bermuda. Some parts of the island were settled a very long time ago—about the time the Pilgrims landed, in 1620. In fact, there are a good many tombstones around the old churches, whose inscriptions date back into the early part of the 1700's, and I think a few in 1600. Many of the roads were made by the Queen's military troops; and as the island is very undulating, in order to get an easy grade almost every main roadway is cut more or less into the solid rock. As this coral rock is light-colored — in some places almost white — the stone roads make a very pretty appearance. I asked friend Morrison if the roads were swept off regularly in order to keep them so clean. He said there was no sweeping except that done by the wind and rain. There is quite a good deal of wind in Bermuda — at least in winter. Everybody there, either when driving or riding a wheel, turns to the *left* in passing. Friend Morrison told me to keep it in mind if I wished to avoid accidents. When I wondered at their reversing the universal rule that is current all over the United States, he replied that all the world except the United States turns to the left. I could not understand why Bermuda should be just opposite all the rest of the world from my standpoint; but he informed me that it was the *United States* that was contrary, and different from everybody else. There was no help for it. I had to learn to turn to the left; but every little while I would forget myself, and be obliged to apologize to some man, woman, or child for attempting to "crowd them into the wall." They accepted my apologies, however, very good-naturedly, for they have the same thing over and over again with every shipload of foreigners.



A BERMUDA STONE-QUARRY, WITH THE QUARRYMEN AT WORK.

In some places these stone roadways are cut down into the rock from ten to fifteen feet. Now, this is not so formidable an undertaking as you might suppose. The Bermuda coral rock saws easier than tender pine boards, and it does not dull the saw very much either. Perhaps I told you that lumber is almost unknown in Bermuda, unless it is shipped in from the United States or Nova Scotia. The houses not only have stone foundation, but stone walls, stone roofs, and, to a considerable extent, stone pillars. Let me give you a picture that illustrates where they get building-material in Bermuda.

You see, when a man wants to build a house he clears off the soil—that is, if it is not a bare spot already — in some corner of his lot, and then saws out his "timber." With a common hand-saw, and a cross-cut saw used by two men, he gets out material very rapidly. The picture shows how deep down they go below the surface; it also gives you glimpses of the cedar brush that grows all over these rocks. On the highest point in the picture you can see where somebody cut out building-material, may be a hundred years ago. As more is wanted they have moved lower down the side of the hill, and got down where it is cleaner. This rock, when it is first uncovered, saws much easier than when it has been exposed to the air. The blocks are cut out and then stood in the sun to season. For the roof, and even for the ceilings of the rooms, they cut the stones quite thin, say an inch or an inch and a half thick. The rock is so porous that the rain would probably go through the roof were it not whitewashed. This whitewash, on exposure to air, soon turns into an insoluble carbonate of lime, and then it sheds water. For a similar reason the walls are also treated once a year to whitewash; and as there is no frost, if you keep your house whitewashed it will never wear out. There are plenty of colored people always ready to keep every thing whitewashed up in style, and there is really no excuse in Bermuda for having any thing look dilapidated. Just keep it whitewashed — fences, out-buildings, etc., and they are always as good as new.

Hamilton, Bermuda, is near the center of the island — that is, the island strings away out ten or twelve miles in two different directions; but wherever you go you are near the sea-water all the while; and on many of the hills you can see water on both sides. This soft porous rock reminded me of the neighborhood of Mammoth Cave. In fact, there are some very pretty caves on the island. Walsingham Cave, not far from Devil's Hole, is one of them. Right beside it is the old home and residence of the poet Tom Moore. Right near the mouth of the cave is a large calabash-tree mentioned in one of his poems. Inside of the cave are basins or wells of sea-water; and this water is so still and so transparent that one may easily look down thirty or forty feet, and see objects on the bottom. When lighted up by blazing palmetto branches this submarine view is very beautiful. The coral rock on the bottom is of varied colors. The white sand sets off every thing and makes it a veritable little fairyland.

The hotels in Bermuda, like those in Florida, are mostly kept open only during the winter season. As every thing has to be brought in, prices are three or four dollars a day—some of them five. While off on a trip to Saint George's we took dinner at an English hotel, or boarding-house, called Mount Erie. It may interest some of the readers of GLEANINGS to know what we had for dinner and how it was served. The dining-room had little tables for just six people. We were waited on by a very pretty young colored woman. There were seven courses in all, the dishes being all taken away and new ones brought for each course. The first course was soup with little fishes about three or four inches long, called "grouts." Course No. 2 was roast beef and Bermuda potatoes. The potatoes were boiled with the jackets on, and they popped open like kernels of corn. The contrast between the red jackets of the Bermudas, with their snowy insides, made them look rather pretty. Course No. 3 was string beans and baked tomatoes. Now, I am not usually much of a hand for tomatoes; but these were, I should judge, first boiled and then baked, and baked *brown*, and I tell you they were tiptop. Course No. 4 was cheese and crackers. The crackers were excellent, and the cheese was the kind that comes in round balls about the size of a cocoanut. Of course, it was tiptop. Course No. 5 was fruit —bananas, apples from America, etc. Course No. 6 was English plum pudding; No 7 was coffee. The coffee was not served till we left the table. A colored girl followed us into the sitting-room with an extra quality of coffee—cream and sugar to match. The expense for —I came pretty near saying dinner; but if you want to be in style you must wait till toward dark, or after dark, for your dinner. What I have described was simply lunch, and this lunch cost 75 cents, our money. I suppose dinner would be more. I did not have any dinner while in Bermuda, for I found it policy to stick to my beefsteak, especially for the last meal in the day.

After lunch we climbed to the top of Mount Erie, and were entertained by seeing one of the Queen's gunboats fire shot after shot. We could first see the smoke, then the splash of the ball in the water; and as the shot generally skipped, another splash half a mile or so from the first one, and then, last of all, we heard the boom of the cannon. It seemed a little funny that we should see the smoke and the splash in the water long before we heard the sound of the gun. Little did I think that day how soon gunboats and cannon were to be the absorbing topic of America, if not of the whole world. On another trip in a different direction we came so near the English fleet that was just then anchored off the island that friend Morrison got permission for us to visit briefly an English man-of-war called the Destroyer. Little did I think, while going over this neat little craft, that we were so soon to discuss such warlike structures with so much interest. This boat was about a hundred feet long; but in the widest part it was a little less than twenty feet. The inside was done off in little cabins, in exquisite style, and every thing for comfort. But I noticed the gangway where we climbed down could be shut up water-tight; it made me think of going down into a tea-kettle and shutting the cover down as tight as a cork in a bottle. The polite and gentlemanly commander took us all through, and answered all our questions; but I was too much "rattled" to ask him how they got air to breathe when the sea was so boisterous they had to be "corked up." Somebody told me they pumped air in, for the inmates to breathe, by means of tubes that run up to the mast-head, which, of course, is always out of the water. The Destroyer is needed more for speed than for almost any thing else; but, of course, she carries some pretty good guns. If I am correct, fifteen or twenty men are all that are needed, even in an encounter. Just about that time we were startled by a dispatch announcing the destruction of the Maine. Friend Morrison said right away that it meant *war* sooner or later.

In my next I shall have something to say of the personal history of my good friend W. K. Morrison. In my travels it has been my pleasure to form the acquaintance of quite a number of remarkable men; and I shall always regard friend Morrison as one of the most remarkable, as he has traveled so much, and has such a general knowledge of different nations of the earth.

OUR HOMES,

BY A. I. ROOT.

Think not that I am come to send peace on earth: I came not to send peace, but a sword.—MATT. 10:34.

It is a little difficult for average humanity to comprehend that a Christian man may also be a *fighting* man; or harder still to reconcile the idea that a Christian man *must* be a fighting man. It is much easier to imagine that Jesus came from heaven down to earth to bring peace and good will. But at times it seems as if there were no path to real substantial and permanent peace except through war and bloodshed. If I understand it correctly, it is with this thought in view that our Savior uttered the words of our text. A Christian man is expected above all others to be at peace and on friendly terms with his neighbors. And that is the great universal rule. And yet there are times when the Christian man can hardly be *called* a Christian unless he makes a general disturbance in the neighborhood. The great danger is, however, that Satan gets hold of us and persuades us that war is the only thing when there is really no need of fighting at all. The Bible is full of texts emphasizing this very fact. Just once, if I am correct, Jesus spoke about the sword instead of peace; and only twice in his ministry—that is, so far as I am aware, did he with his own hands set an example of any thing like *aggressive* Christianity. You may remember that at two different times he overturned the tables of the money-changers, and drove out the guilty traffickers with a whip of little cords. It has occurred to me that *sometimes* our churches, and especially our church festivals, might at the present day need a heroic, God-fearing man who has grace to do the same thing, and with the same words the Savior used: "My house is the house of prayer; but ye have made it a den of thieves."

A thousand times in my own life I have regretted and repented of waging war when some other course might have answered to accomplish the same end; and ever so many times I have repented that I waged war so *vehemently* when just a *little* "war" might have answered the purpose. It seems to be this way: When even the most devout and best man decides that it is a matter for "righteous indignation," unless he is very careful Satan gets a finger on his reins and persuades him to go further and say more than he really intended to say when he started out. And herein is one of the most difficult things a Christian has to meet. Truly it *is* a "straight and narrow path" for humanity; and sometimes it seems to me so exceedingly straight and narrow that I shall never be able to make any decent record. *My* path, instead of being straight, turning neither to the right nor to the left, as I look back seems to present a series of wabbles; and the wabbles are not always on one side, mind you. Somebody breaks the rules of our establishment by indulging in profanity. The transgressor may be a difficult man to manage, and I dread the encounter, and put it off. Sometimes I entirely neglect to do any thing. In doing this I am deviating from the straight and narrow path; and if I continue to deviate, pretty soon I hear from it. Others take the opportunity to follow this man's example, and by and by our establishment, that has such a reputation for good morals, gets to be—well, as bad as some crowds of workmen you have seen or heard of. Wabbling to the other side of the straight and narrow path would be to reprove the man while I am provoked, and may be turn him off. Both ways are bad, and I do not know but one course is about as bad as the other. The straight and narrow path is to wait long enough so that you can find your man in good temper; and be sure that you see him alone by himself, without others around to repeat and report the transaction. Do not undertake any task of this sort until you have prayed that the divine Spirit may give you grace and wisdom. If your daily work is such that it requires constant prayer, all the better for you. Nothing does a man so much good; nothing braces up the Christian like experiences that drive him constantly to the throne of grace. "O Lord, I am weak. I am very weak and foolish. Thou art mighty. I come to thee; for without the presence of thy Holy Spirit I shall surely fail." After a prayer like the above, that is wrung from the heart, good work is going to be done.

Without question, it is sometimes the duty of Christians to fight. Yes, it is the duty of Christian *nations* to fight; and no doubt it is God's will that Christian nations should fight with cannon and all the modern implements of war; but as to just *how far* the person or nation should go in fighting is a question. Whenever I think of it, a brief prayer wells up from my heart: "O Lord, give grace and wisdom to those who are fighting—fighting, as we believe, for thy kingdom and for thy righteousness."

In fighting evil and wrong, it is not always easy to say just where we have stepped out of the straight and narrow path. There may remain, after the affair is over, a sort of unpleasant feeling or a reproving voice, as it were, as if the Holy Spirit had been grieved;

but yet in going over the matter in detail, self or Satan (which is it?) seems to say, "Why, that is all right," and so on clear to the end.

When you are fighting, even for Christ's sake, do not get a going with such vehemence that you can not stop when you ought to.

We need fighting Christians for the cause of temperance. God only knows where our nation would land if we did not have fighting Christians. Yes, and we need fighting *ministers*. May God be praised that we have quite a few of them at the present time. Some have lost their lives—have died martyrs to the cause of temperance. But there are more who are ready to die when it seems as if somebody must die to stop this awful and overwhelming traffic. While I write, this country is waging war with a foreign nation. If I am right, it is almost the first, or, say, one of the first, battles fought directly for the sake of humanity. We are not fighting for our relations, and we are not fighting because it is Americans who are suffering wrong and oppression. The spirit of the times seems to say that every suffering son of humanity is our neighbor, and our country has accepted that great Bible truth, brought out so prominently when Cain asked the question, "Am I my brother's keeper?" We are recognizing the Cubans as our brothers, no matter what the race, color, or condition.

For years past the world has been discussing the question whether it is right and proper for a nation to interfere when some other nation is torturing its people by prolonged starvation, bloodshed, and outrage. During the atrocities perpetrated on the Armenians, Gladstone and a host of Christian people back of him called loudly for intervention by the powers—intervention by war if nothing else would answer. None of the nations saw fit to move in the matter. Finally, however, may God be praised, our own nation has seen fit to move when a repetition of these same cruelties came a little nearer our own shores. If this should be the means of bringing about a new departure that shall spread over the whole wide world—a new departure that shall by custom authorize the intervention of foreign powers when cruelty goes beyond a certain limit, then I say again, may God be praised.

It used to be taken for granted that a father could punish his child just as much as he saw fit; and if anybody remonstrated he could say, "Tend to your own business and I will tend to mine."* But of late many a father has found to his sorrow that he can not carry this thing beyong a certain limit, before the neighbors interfere. Not very long ago some very ungrateful sons went too far in being cruel and inhuman to their father. They were greatly astonished when not only the neighborhood but the whole community turned out and interfered; and I believe people generally are fast learning that public opinion may be outraged only about so far. God forbid that I should encourage lynching or mob law; but I do rejoice that community is beginning more and more to hold each person responsible for his acts. Perhaps our Endeavor Societies, that have pleased and astonished us so much by their wonderfully rapid growth, may, when they get to be a little older, take up a little more aggressive Christianity. While the great meeting was in progress in San Francisco there were terrible strikes going on throughout our land. Some of them almost threatened civil war. I suggested at the time that, as there were Endeavorers, without question, on both sides of the opposing forces, this great Endeavor meeting should try to bridge over the chasm between capital and labor. There are enough Endeavorers to do a tremendous work in the way of arbitration. If that should fail, what a mighty work the Endeavorers, if they would fall into line, might do in battling for right! and in the same way along many other lines. They have already accomplished a good deal in the way of discouraging Sunday traffic and Sunday excursions. The Young Men's Christian Association is another organization embracing Christians of *all* denominations. *Surely* we may expect the grace of God to go with and guide these friends of ours in fighting for the banner of Christ Jesus.

When this present war is ended (and I have believed from the very start that God would help us to make it a brief one) there is going to be an opportunity for spreading the gospel, such as the world never had before. Everybody seems astonished at the ease with which men and money came forward when war was proclaimed. May God grant that, when peace reigns again, this same spirit of patriotism may prompt mankind to have a like enthusiasm in coming forward to support the missionary work! The call for teachers the call for printing-presses and books, was never before so great as now. The most benighted nations—those that have been deepest steeped in superstition and heathen darkness—are waking up and groping toward the light. God help us that we may be able to give them *wholesome truth* instead of whisky, opium, and tobacco.

MISTAKEN VALUES.

We clip the following from a recent issue of the *Sunday-school Times:*

> The man who cheats another thinks that he has the best of a bargain, because the character for honesty and truth which he sold he valued at less than the few dollars which he gained. Yet those few dollars a single day of honest labor might have given him, while that lost innocence, that is beyond price, can never again be recovered.

Let me suggest that the above applies to those who not only willfully cheat a neighbor but who charge a larger profit on things than they themselves would be willing to give under like circumstances.

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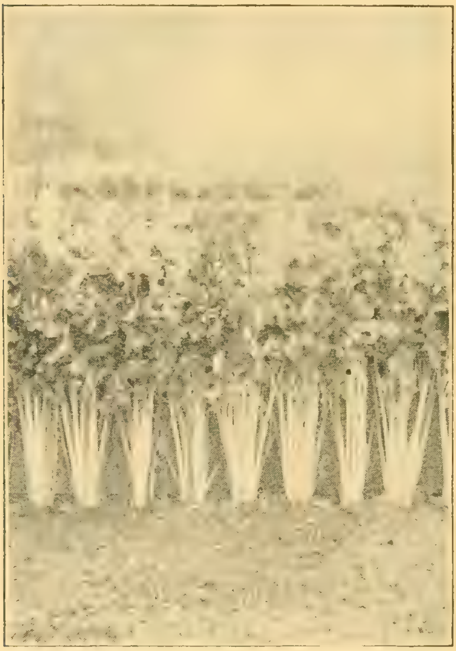
* Until within a few years a man could whip his horse as long as he felt inclined; and if anybody remonstrated he could tell him to "mind his own business;" but, thanks to the Humane Society, the Christianity of to-day says, "Not so;" so that in one sense the Christian and humane world are beginning to regard even domestic animals as our neighbors in the sense that Jesus put it when he gave us that wonderful parable of the good Samaritan. The Christian says, "Thus far shalt thou go, and no farther." To be sure, it is a hard thing to go to court and incur a neighbor's displeasure and ill will; but one can not be a consistent Christian unless he bears such crosses as these, and, when nothing else will do, takes up the sword in defense of the helpless and unprotected.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

HOW TO GROW NICE CELERY WITHOUT ANY EARTHING UP.

We have had so much instruction in growing celery that it would almost seem as if every one should know how. But even if every one does know, he does not do it. The directions given by our friend below will, I think, do it every time, providing you have the right kind of soil to start with; and you can make any kind of soil right if you go at it as I have described elsewhere in this issue for growing strawberries. If you own or can get control of any piece of ground where it can get the sunshine and the rain you can *make* it grow stuff. We will now let our friend tell his story.



Growing celery for market is quite a particular job. A number have tried in our locality to grow celery, but have not succeeded very well. It is not as good when earthed up, as the soil is black and sticky, and leaves the stalks rusty, besides the great amount of work there is in earthing up. Seeing an article in GLEANINGS last spring I went to work as follows: I started my plants in April in small low boxes, quite thick; when large enough I transplanted into larger ones (outdoors), 2 feet wide and 3 long, in rows 2 inches apart, and ½ inch in the row. I kept them wet until large enough to set in the garden. I prepared the ground with rotten barnyard manure; plowed in and thoroughly harrowed, then staked out the rows three feet apart, and raked the ground fine and a little hollow where the rows came. Wet the ground well and lay a board 5 inches wide right where you want the rows; get the plant-box and give them also a good wetting. If grown right, the box will be full of roots. Cut with a knife between the plants and take them out, and with a dibble make a hole (or, rather, a row of holes) on each side of the board, about 5 or 6 inches apart. If there is no rain at the time, water well. I make the hollow a little lower at one end, so as to run the water between the two rows with a hose from a tank. Our water is pumped up with a windmill for our stock. When the plants are about six inches high, put up boards 18 inches wide on each side of the two rows, a foot apart. The boards, straight up, are held apart by narrow strips tacked across tight at each end with a board one foot wide on the end. I now put long barnyard manure between the boards, about 4 inches deep; tramp it down well, and the job is done. Ours grew at the rate of an inch a day until it was out of the boards.

This plan does not need much water. After the mulching is done I take a gas-pipe with a hole in every foot; lay it on the mulching, and screw the hose in the end, and the water will soak through the mulching and down into the hollow where the plants are. When these two rows are wet enough, move to two others, and so on. When the leaves are well out of the boards, or about two feet high, close the board in at the top, and in a week blanching is done.

When we want celery for market I take the board away, as shown in the picture, and cut it out. It is beautiful, tender, and clean; needs no washing or cleaning. When I took the first to town the people were surprised to see such celery grown in Minnesota. When I went again I inquired how they liked it. They told me it was as good again as that shipped in.

Welcome, Minn. WM. SUTER.

Our friends can see from the picture above how the celery-crop covered the ground and bleached itself with the double rows between the two wide boards placed only about a foot apart. The two rows with the 18-inch board on each side would occupy a little more than a foot — say 15 inches of the space between the rows. This would leave about 20 inches for a path to go between the celery rows with boards on each side. As I understand it, the manure is to be packed 4 inches deep around the plants between the boards; that is, as soon as they are tall enough to be mulched. With four inches of good strong manure it would not take very much water to keep the ground constantly moist. Now, I would put a manure mulching in the paths as well as around the plants between the boards — that is, unless your ground is exceedingly rich. That tank kept supplied with water by means of a windmill is another important feature in making it a success. Plenty of water and plenty of manure will do almost any thing with celery, especially where the manure is applied as a mulch. It would cost something to furnish water, manure, and boards for a whole acre on this plan; but I tell you, the crop, if managed right, would bring in a lot of money. I know it will succeed, for I have seen a modification of it on the celery-farms near us.

PREPARING GROUND FOR STRAWBERRIES.

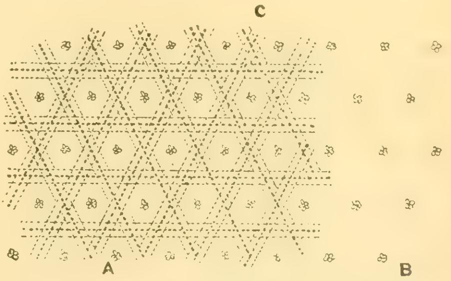
Right near our quarter-acre of plant-beds is a piece of poor clay ground that persistently refused to give decent crops of any thing. It was not only poor soil, but it was in a low spot where water had stood. I underdrained it, but it was soggy and sour, even then. Then I made surface-drains all around it. I plowed it up, worked down the lumps, and put on manure. I suppose a good many old farmers would have said I had better let it alone and make garden somewhere else. But the ground was near the railroad, and had cost at about the rate of $2000 an acre. We bought it more to prevent somebody else from locating there than for almost any thing else. Well, I kept on working the ground, plowing manure under, and working old well-rotted manure into the surface, but still it did not seem to amount to much. Then I put on some cotton seed that came to us with sweet potatoes packed in them; put on poultry manure; then I gave it a good dressing with lime, and finally it began to respond and "smile." We put out Marshall strawberries and other kinds that were in good demand, and began to sell plants. The results of my patient working and manuring began to be apparent. We had great beautiful berries, wonderfully large and beautiful green leaves, and then great runners almost as large as slate-pencils in size. And then what beautiful plants we secured to send out to customers!

We kept working the ground with wheel-hoes between the rows; and every little while, when the plants got to getting out into the paths, so it was difficult to cultivate, we would stretch a string and take up all the plants outside of the string. Then just after a rain we would run the hoes again until the ground was fine, soft, and mellow. At one time I felt a little fear that I was throwing money away by putting manure and work on that piece of ground. But it has given us beautiful plants that have paid several times over for the manure and labor, and the ground is in such tilth now that it goes right ahead without any manuring. In fact, it is the finest piece of ground, I do believe, on our premises. Any thing will grow there. You may say we get our money back because we are selling plants at good prices. But I think you will get your money back for fixing up a piece of ground like this, even if you do not sell a plant. In the first place, you get fruit that "astonishes the natives," both in quantity and quality. If you do not sell plants, you probably buy them, more or less. Now, have a piece of ground like this; and when new plants come out that cost a lot of money at first, purchase just one plant. If it does not become popular, you are not much out of pocket; but if it does, you can raise your own plants at a cost of less than a cent apiece, when they may be worth a dollar a dozen, or even two dollars, on the market.

There are three or four new strawberries that command very high prices in almost any market. The man who purchased only one plant last year, and raised a lot of young ones from it, is lucky. The Nick Ohmer, Margaret, Carrie, and Darling are all plants of this kind. Another thing, it is fun to have a garden where you have a piece of ground that just makes every thing boom. On our clay soil, when we once get a piece like this into high-pressure condition the effect of the heavy manuring lasts through a long period of years. In the shade of our machine-shop there are some beds that were fixed up several years ago. They have had no manure for several seasons. As they are so much shaded we use them only for celery-plants. The ground is fine, soft, dark, and rich; and it is a beautiful place to heel in stuff for a few days, where we want it in the shade. The quality of the soil seems to invite any plant to put out roots. In fact, we have been selling the dirt to the people around town for their house-plants, at 25 cents a bushel. Now, every one of you, I am sure, can afford to have a little piece of exceedingly rich ground near your homes. First have it perfectly underdrained; then either spade or plow it up very deep. Let it freeze in winter and dry out in summer; then plow, pulverizing it at just the right time after every summer shower. Get out all the sticks and stones. If it is heavy clay, put in some sand. Give it a coating of lime occasionally; and, above all, work in lots of good stable manure; and be sure that you do not let it spend its energies in growing great weeds after you get it up to the high-pressure notch. Such a piece of ground will grow weeds higher than the eaves of your house in an incredibly short space of time, if they once get a going.

OUR HALF-ACRE STRAWBERRY-PATCH WITH PLANTS TWO FEET APART EACH WAY.

Last fall I told you about this—see diagram below. We are just now having fun running the wheel-hoe through it after every summer shower, cultivating it in all three directions, as shown in the diagram. The ground is getting so soft and fine that the boys do not dislike the job of cultivating it at all; and, in fact, it is but little work to keep it clean, and the ground soft and fine. The plants are growing *amazingly*. The original idea was, you may remember, to take off every runner as fast as it showed itself. But a difficulty presents itself right here. As this was to be a trial patch of the different varieties for hill culture, it contains some very high-priced plants; and to pull off the runners and throw *them* away would be rather extravagant; therefore we have decided to let runners grow on at least a part of these valuable plants, and get them to take root in little pots of jadoo. After the roots have started you can clip off the runner and move the plants into a shaded bed. I do not believe this will rob the parent plant of very much vitality. It will be keeping off the runners, with this difference: we allow them to commence taking root before we "wean" them, or before we take them away from the mother-plant entirely. But I tell you it is fun to have a strawberry-patch so you can run the cultivator all around every plant, and do it fast. The matter is so much of a success at the present stage that we thought best to give you a cut once more.



Please note that the dotted lines show how we run the three-tooth Cole hand wheel-hoe.

THE SOJA BEAN COMPARED WITH THE COW-PEA.

The following from Prof. Brooks, of the Massachusetts Agricultural College, answers so well the questions that have been asked by a good many that we copy it from the *Rural New-Yorker* of May 7, with some few omissions:

We prefer the soja bean to the cow-pea, either as a fodder crop to be fed green, or to be put into the silo, for the following reasons:

The soja bean, a suitable variety being selected, will ripen in this locality, while the cow-pea will not. This enables the farmer to produce his own seed, and, further, the plant can be allowed to reach a degree of maturity sufficiently advanced to make the fodder less watery, and richer in the most important constituents of plant-food than the cow-pea in the immature condition in which it must be cut.

The soja bean is a considerably richer fodder than the cow-pea

The Medium Green variety, which I believe is the very best sort for this latitude, constitutes the better basis for comparison with the cow-pea. It will be noticed that this variety gives us nearly twice as much fat, more than 1⅔ times the amount of flesh-formers (protein), and about 1½ times the amount of heat producers (carbo-hydrates) as is given by the cow-pea.

When, in the light of these facts, we consider further that the Medium Green soja bean has, upon an average, as grown here, produced as large yields as the cow-pea, its superiority becomes strikingly evident. The crops of both usually average from 10 to 12 tons per acre, green weight. With a yield of 10 tons, the cow-pea will give us the following number of pounds of the different nutrients per acre: Fat, 140 pounds; flesh-formers, 620 pounds; heat-producers, 1720 pounds. The soja bean with the same crop gives us: Fat, 240 pounds; flesh-formers, 1160 pounds; heat-producers, 2400 pounds. These facts make the apparent superiority of the soja bean as a fodder crop very clear.

As is well known, however, the value of a fodder does not depend entirely upon composition, but is affected in a marked degree by the digestibility of the nutrients which it contains. There is some evidence that the digestibility of the soja bean is not quite so great as that of the cow-pea; but sufficient experiments have not been made to enable us to form a final judgment upon this point.

The soja bean, being less watery than the cow-pea, keeps better in the silo. We have made excellent ensilage by mixing either corn or Japan barnyard millet with the soja bean in the proportion of two parts of either of the former to one of the latter. Such ensilage is palatable, and in composition approximates closely the German feeding standard for milch cows. One peck of seed will plant a little more than one-half acre. If sown for seed I would drop about eight seeds per running foot in the row; if for fodder, from 10 to 12 seeds. The distance between the rows on good land should be about 2½ feet. If the land is poor the rows may be somewhat nearer together. The crop does well on any good corn land, and should be planted about the same time that corn is planted. The seed can be very satisfactorily put in with any corn-planter that plants in drills.

These beans are edible, and are the richest known natural vegetable product. I do not believe, however, that they will be as well liked for table use as some of our older varieties of beans; they are too rich and oily to suit most tastes. They are not much used directly as food, even by the Japanese, but are largely employed in the manufacture of a table sauce known as shoyu (soy), whence, probably, the names soja, soya, and soy. They are, also, largely used for the manufacture of a bean cheese, which is a favorite and largely used article of food. A great many of the beans are, also, used as food for horses and cattle.

Mass. Ag'l College. [PROF.] WM. P. BROOKS.

THE HOME MIXING OF FERTILIZERS.

The above is the title of a newspaper bulletin from our Ohio Experiment Station, sent out April 11. Within a short distance of our place a sub-station has been chosen, for the reason that it is about as poor clay soil as any to be found in the State. At this sub-station home-mixed fertilizers have been carefully tested side by side with prominent brands in the market; and the home-mixed, at about $18 a ton, has given results fully equal to the factory brands costing $30 a ton. In some instances the home-mixed, that cost but little more than half as much as the commercial brands, have given equally good results. The crop raised was corn. Full particulars in regard to mixing, where to buy the materials, etc., are given in the bulletin. If you want it, write to the Ohio Experiment Station, Wooster, Ohio, calling for Bulletin 182.

GOOD NEWS FOR THE FARMERS.

It rejoices my heart to see things brightening up among the agricultural people generally, with wheat toward $1.50, potatoes toward $1.00 a bushel, etc. I know it is a little hard on the laboring man; but things have been a good deal harder on the tillers of the soil for quite a spell back, and I think the laboring man and the other folks can stand it. If you think the farmers are getting rich too fast, or are getting more than their share, get some ground, and raise wheat and potatoes yourself. See?

KEEPING OVER EGYPTIAN ONION-SETS.

Mr. Root:—You say your Egyptian onion-sets do not keep well over winter. Mine always do. I keep them outdoors in a wagon-house, without any protection, spread on the floor. I always plant in the spring.

Lordstown, O., March 28. H. A. SIMON.

Do you mean, friend S., that you let them freeze and thaw just as much as they will? I know they are very hardy, but freezing and thawing makes them wet; and when they are wet they will sprout, so you will have onion-*sprouts* in the spring, instead of onion-*sets*. Please tell us in what shape you put them in the wagon-house—spread out thin on the floor or in a heap? and don't you cover them with hay, straw, or any thing of that sort? Do you put them on the ground or in an upper loft?

ONION-SETS FROM LARGE ONIONS.

My people used to raise the top onion as long ago as I can remember, and they are a splendid onion, I think. They used to keep the same old onions year after year to raise sets from, and always had a crop of more or less little onions; whereas in sowing seed it would often fail. In setting out the little onions, once in a while there would be one run up to form top onions; they broke them off or pulled them up, as that onion would amount to nothing. In setting out the big onions to raise little onions I prefer setting out new big ones every season, as I think they supply more top sets. I have seen very nice large onions raised of this kind. MRS. ANN SCAIFE.

Barbours, Pa., April 5.

I have been looking for those onions for years. My father raised them for sale. He would not bother with black seed. If they get frozen in winter it does not hurt them if they are not frozen badly and repeatedly thawed out and frozen.

Taylor, Arizona, April 6. MRS. D. ELLSWORTH.

THE OREGON BLACKBERRY IN ILLINOIS.

One of my neighbors, 15 years ago, was in Oregon, and was so well pleased with the Oregon vining blackberry that he brought some here and planted them. They grew well on clayey white-oak land; also in rich garden soil; make large growths, but kill to the ground every winter. I have had them for ten years. They never bear anything except a little on the shoots of the same year, late in the fall. I never saw one gallon in a year, on a patch of four square rods. I have been trying to kill out a few in the garden, but they still hold their place. M. W. MURPHEY.

Cuba, Ill., Feb. 25.

LONG-RANGE WEATHER-PREDICTIONS, ETC.

In our issue for Jan. 1, page 26, and Feb. 15, page 152, in commenting upon and comparing the work of the United States Weather Bureau with that of Mr. Hicks and others, I used language to which Mr. Hicks takes exception, claiming that I assailed his personal character. To correct such wrong impression, and wishing to be entirely fair, I would say that I am not personally acquainted with Mr. Hicks, and had no means of knowing his private life. I did not then intend to, neither do I now, desire to reflect on his personal character; indeed, I have been told that it is above reproach, and that Mr. Hicks himself repudiates all connection with astrology. For whatever I may have said reflecting on his moral character or his standing as a Christian, I beg pardon. So far, so good; but that does not alter my opinion of *his forecasts*. Believing that his theories respecting long-range predictions were unsound and unscientific, and at variance with the principles and teachings of the United States Weather Bureau, I felt then and do now that the publication of his forecast was doing *harm;* and that as a publisher, and one who has had quite an extended correspondence with the Weather Bureau people, it was my Christian duty to criticise, which I did.

I am glad to be able to indorse the chapters in Hicks' almanac on the use of the barometer, and the one on constructing safety-cellars and cyclone-caves. This latter chapter I shall be glad to see published in every home paper in the land. It gives not only full directions for constructing a cellar where the inmates of the home may be safe during a cyclone, but it also gives plain and sensible directions how to behave at such a time—putting out lighted lamps, fires, etc., so the house may not be burned up after it has been blown down.

DONATIONS UP TO DATE FOR THE SHAWNEETOWN DISASTER.

Mr. A. I. Root: — As all donations were to be acknowledged through GLEANINGS, I inclose a list up to date. I am deeply thankful for what they have done. Some have been very liberal indeed. If any one has sent money direct to me, and his name does not appear, he will do a kindness by writing to me. I have private reasons for same. The following is a list of the donations:

A friend in Illinois, $10.00; Leahy Mfg. Co., Higginsville, Mo., $14.50; Mr. J. Hartzell, Udison, Pa., $1.00; Mr. C. Theilmann, Wabasha, Minn., $1.00; Unknown, Pennsylvania, 20 cts.; Mrs. A. Stevenson, Tingley, Ia., $1; Mr. H. D. Edwards, Delhi, Ill., $1.00; D. M. Swain, Parkville, Ind., $1.00. Total, $29.70.

DONATIONS IN BEES.

E. T. Flanagan, Belleville, Ill., 3 colonies; D. M. Swain, Parkville, Ind., 1 colony; Hoffman & Davis, Holtana, Tenn., 2 colonies; Alfred Smith, Mt. Vernon, Ind, 1 colony; C. E. Hardesty, Canton, Ohio, 1 colony.

THOS. MCDONALD.

Shawneetown, Ill., May 6.

Please find inclosed $2.00 for Mr. Thos. McDonald, in Shawneetown. AARON NYHUISE & SON.
Evansville, Ind.

Sirs:—Please find inclosed one dollar for Mr. Mc Donald, of Shawneetown. OLIVER THORN.
St. Hyacinthe, Que., Can., May 8.

A. I. Root:—I wrote Thomas McDonald, of Shawneetown, Ill., that I would send him a good colony of bees. I think we bee-men ought to help him to get a start. If each one would do the same he would soon be on his feet again. C. E. HARDESTY.
1830 Hurford St., Canton, O.

ELECTRO-CHEMICAL FINGER-RING.

This is a remedy(?), not only for rheumatism, but for gravel, gallstone in the bladder, diabetes, Bright's disease, and other chronic troubles that baffle the best physicians of the present day. The price of the ring is $2.00; gold-cover, $4.00. The plain ring is just as good(?), but it does not look as nice as the gold one. It is after the Electropoise and Oxydonor type, even to the reading-matter. We submit a sample of it.

> That electricity, if it can be applied continuously and in the proper proportion, will remove acid from the blood, is admitted by all.

Not quite, Mr. Electricity man. I know of quite a few people who do not agree with the above.

> The current is so slight that it is not annoying to the most delicate person or child any more than a gold ring would be, until becoming accustomed to wearing it.

I read the above over several times, but I confess I do not quite understand what the patient is to become "accustomed to" unless it is the "not annoying" part.

> The electro-chemical ring is guaranteed to retain its original quality until worn out

Well, now, it is comforting to know that we agree on something, and I can stand right back of you, my good friend, in your assertion that the original quality will keep "right on" until the ring is worn out. Good! But now for the rest:

> It is not charged with electricity nor magnetism, but remains inactive until it comes in contact with the acid in the blood, when it generates an electro-chemical action. It will stop any further accumulation to enlarged joints.

Here we must take issue. The idea that a finger-ring, no matter how it is made, will prevent further enlargement of joints by "electro-chemical action," is all stuff and bosh. Why, look here, friends; instead of paying out good money for rings and apparatus, just buy a horseshoe and nail it over the door, and it will not only cure all the diseases you are afflicted with, but also those of every member of your household. More than that, you can tell the neighbors that whoever goes in and out through that door, and passes under that *horseshoe*, will be well, and full of vim and vigor. The horseshoe will not begin to cost as much as Electropoise, Oxydonor, or even this finger-ring. The horseshoe cures exactly on the same principle as these advertised toys; and I think every intelligent up-to-date physician in our land will stand by me, at least thus far, that the horseshoe will do *just as much* as these senseless traps. The proprietor of the electric finger-ring gives the names of a good many people occupying prominent business places in Toledo, Ohio, in proof of its magical efficacy.

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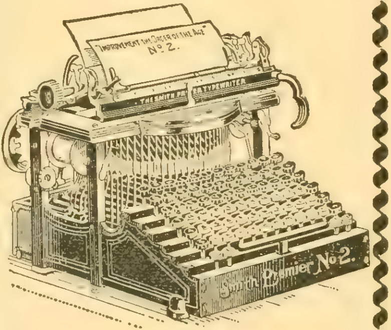
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I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

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W. H. LAWS, Lavaca, Seb. Co., Ark.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS, Lisbon, Texas.

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Shipped from Jackson, Mich., at Root's prices. Send for list. W. D. SOPER, Box 565, Jackson, Mich.

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That will give satisfaction in the way of big colonies, that are gentle, and the best of honey-gatherers, try our strain of Italians. Tested queens, $1.00; untested queens, 75 cts. each; $8.00 per dozen.

J. W. K. SHAW & CO., Loreauville, La.

Italian Bees and Queens.

Queens, $1.00; bees by the pound, $1.00; nuclei, two-frame with queen, $2.00; one-frame, $1.50; full colonies, $5.00. Also fancy poultry.

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C. M. HICKS, Hicksville, Wash. Co , Md.

ITALIAN QUEENS.

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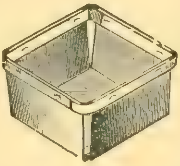

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E. A. SEELEY, Bloomer, Ark.
P. O. M. O. office, Lavaca, Ark.

SPECIAL NOTICES BY BUSINESS MANAGER

THE SITUATION AT PRESENT.

I believe we can say that we are not getting any further behind, but are rather gaining a little on orders. But as the season advances, delays are more serious and everybody grows more anxious and impatient to have their wants supplied promptly. Every mail brings us several dozen letters and postals urging us to hurry their shipment, as bees are swarming. We have to have two or three extra clerks employed looking up and answering these people. Nothing is really accomplished by thus writing to us, except to add to the strain on our already overtaxed nerves and strength. If you could drop in and see the haggard looks and dragged-out appearance of many of our faithful workers who are putting in twelve to sixteen hours every day, doing our utmost to get orders filled, I don't know that you would have any more patience. but I rather think many of you would make up your minds to order early before the rush is on next year. As we have often said, we planned for a legitimate increase in business over last year, but not for more than double the amount; and you who are ordering three or four times as much as in former years must have more consideration, and look ahead, and get ready when you have such a revival as last year's white-clover crop produced. Many are writing us that, as bees have wintered well, they believe there is going to be a good demand for supplies in their neighborhood. We have to answer all such that they have waited too long; that we can not supply the agents already at work, and can not give terms to any new agents, or promise shipment under three or four weeks after orders are received. If such people can not look ahead and take some risk themselves, and prepare for what is coming, they deserve to "get left." We are very sorry we are not in position to meet the wants of all, but we are doing our utmost, and more you can not ask.

During the past two weeks we have shipped eight or nine carloads of goods, the most of which were ordered in February and early March. We have several more cars yet to go, which were ordered in March and first part of April. Of less than carload orders we've very few unfilled that were received before April 20; and very many, received since that date for items that could be spared without robbing older orders, have been shipped. We are shipping over a hundred orders every day, and we must have over 2000 unfilled orders on hand. If you write about one of these orders, or ask to have something added to it, you can imagine it takes time to locate an order among so many. Have all the patience you can muster, and don't write about an order unless you positively must. If you can not wait, always remember that we will cheerfully return your money which you send with the order if you request it, and think you can do better. We are getting goods from two leading factories in Wisconsin, and have to wait several weeks to have our orders filled. A New York factory writes they are at least two weeks behind, and likely to be still farther behind before the end of this month.

"Buds that Bloom on Bonnier Banks" is the title of a very neat pretty little book of poems by the Rev. Norman Plass. It is specially intended for sorrowing hearts, for the writer has been passing through the deep waters, having lost a bright promising boy of about eight years. Why do we speak of it in this connection? Bro. Plass was formerly our pastor here, and it was he who wrote the poem in GLEANINGS, some time ago, entitled "We be Brethren." We feel sure it will do a world of good to those who have recently seen sorrow, and we commend it to all such. Price, neatly bound in decorated board covers, sixty pages, 30 cts. postpaid. Address Rev. Norman Plass, Barrington, R. I.

MAPLE SYRUP AND SUGAR.

We have on hand a limited quantity of maple syrup which we offer at the following prices: Per gallon, 90 cts.; 10 gals., 85 cts. per gal.; 20 gals., 80 cts. per gal. Also a limited quantity of sugar, which we offer as follows: No. 2, per lb., 9 cts.; 100 lbs. or more at 8 cts. No. 3, per lb., 8 cts.; 100 lbs. or more, 7 cts.

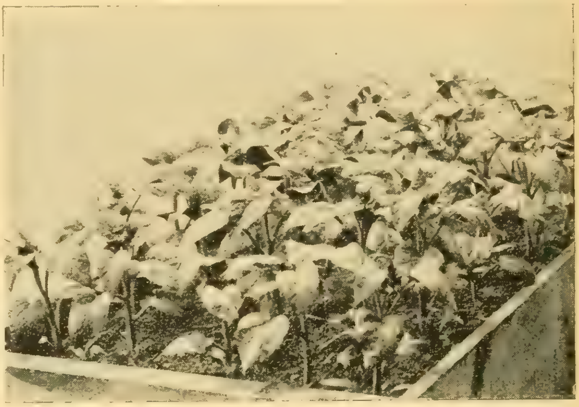
Special Notices by A. I. Root.

JAPANESE BUCKWHEAT—ADVANCE IN PRICE.

Probably in sympathy with the advance in wheat, buckwheat has taken a sudden start up, and we can not furnish seed after this date for less than the following prices: Peck, 25 cts.; ½ bushel, 45 cts.; bushel, 85 cts.; 2 bushels, $1.50 Single pound by mail, postpaid, 15 cts.

BURPEE'S EARLY FORDHOOK FANCY TOMATO.

On page 153, Feb. 15, we spoke of Mr. E. C. Green's new tomato. This is a cross between the Potato Leaf and the Dwarf Champion. The crossing was done by Mr. Green. Now, it is a little funny that he has succeeded so perfectly in getting a combination of the two tomatoes; and the surprising thing is that the new tomato has some characteristics not found in either of the parents. It is the handsomest tomato-plant, I think, the world has ever seen. In fact, it would do very well for an ornamental foliage plant to be placed on a lawn. Well, when our enterprising seedsman, Burpee, bought the plant of friend Green, he also made a contract with him to grow 100 lbs. of seed—that is, if I remember correctly. In order to do this Mr. Green built a little greenhouse just on purpose to grow plants; and this greenhouse is now full of these new tomato-plants transplanted into little boxes, and altogether it is a handsome sight. I can not show the whole greenhouse, but here is a glimpse of one of the boxes. Not only to the peculiar leaf that does not look like a tomato at all, but I want to call your attention to the stout substantial stalks of the little plants. It is certainly an easier tomato to transplant than any of the old-fashioned kinds; and I do not believe anybody would call it a tomato unless told what it was It might be hard to sell plants of this kind to customers, until they have grown them one season. The fruit looks very much like the Dwarf Champion, and is fully as handsome. As our seeds are not yet all gone, we will send ten of them, free of charge, to any reader of GLEANINGS whose subscription is paid up. If you put them out right away you will probably get fruit before frost comes, and I should not be surprised if the seeds would be worth considerable for next season.



THE NEW TOMATO, FORDHOOK FANCY, A CROSS BETWEEN THE "POTATO LEAF" AND DWARF CHAMPION.

THE SOJA BEAN—LOWER PRICES FOR SEED.

By purchasing a large stock directly from the grower, we are able to give lower prices on the soja bean than heretofore, as follows: Quart, 15 cts.; peck, 60 cts.; bushel, $2.25. We have just furnished our Ohio Experiment Station ten bushels. In making the order they write as follows :

OHIO AGR'L EXPERIMENT STATION,
WOOSTER, OHIO, March 18, 1898.

Mr. A. I. Root:—I am thinking now of trying them on a larger sale than ever before as a crop to plow under, putting them on this spring instead of oats, and plowing down for wheat this fall.

J. FREMONT HICKMAN.

SEED POTATOES.

We are practically sold out on every thing except the Freeman, Bovees, and a few Red Triumphs. For prices see last issue. The *Freemans* at $1.00 a bushel, or $2.50 per barrel, it seems to me, are a bargain. You see they are worth $1.00 a bushel for eating purposes.

STRAWBERRIES MAY 15.

Well, we actually have young plants, and quite a lot of them, potted in jadoo fiber, in the month of May. Who ever heard of a potted strawberry-plant in May? Catalog-makers generally announce that they are ready by the first of August; and some enterprising strawberry-growers have furnished them as early as July. We have only the variety called Earliest ready to send out. Price, postpaid, 10 cents each, jadoo fiber and all. Or we will give two of these potted plants to all who send us $1.00 for GLEANINGS, as offered on page 324, April 15th issue. The Darlings will be ready a little later. These two, you see, have been forced under glass. Nick Ohmers we shall not be able to send out this way, probably, before June or July. By the way, the Nick Ohmer is in about as great demand now as any other strawberry before the world, and I think it commands the highest price of any that I know of. And there is something funny about the Nick Ohmer that will always enable you to tell when you have the genuine plant. It has a fashion of having, every now and then, four leaves on a stem, like a four-leaf clover. Almost every plant will show one or more such leaves; and occasionally you will see a plant with the fourth leaf united so as to make a little cup like a vase—something like a pitcher-plant, for instance. We find these pitcher-leaves every now and then on the Nick Ohmer, but I have never seen it on any other strawberry-plant. It does not make runners as fast as the Earliest and Darling, and that is one reason why the plants are going to be high-priced for some time. But just give them fair soil and culture, and the great large rank leaves and stems will astonish people, even before the big berries astonish them still more. Every strawberry-enthusiast ought to have at least one Nick Ohmer.

CONVENTION NOTICE.

The next annual meeting of the Central California Bee-keepers' Association will be held at Hanford, Cal., June 1, at 10 A.M., to elect officers, and attend to such other business as may need attention. All bee-keepers invited. W. A. H. GILSTRAP, Sec.
Caruthers, Cal.

The next quarterly meeting of the Fresno County Bee-keepers' Association will be held at Fresno, Cal., in the City Hall, at 1 P.M., June 8, to adopt constitution and by-laws, arrange for marketing honey, and to attend to other business. All bee-keepers invited.
Caruthers, Cal. W. A. H. GILSTRAP, Sec.

QUEENS Untested, 50c; doz., $6.00. Warranted, 60c; doz., $7.00. Tested, 75c; doz., $8.00. Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.
CLEVELAND BROS., Stamper, Miss.

WHITE and Bl'k Minorcas; pure bred; best strains. Eggs $1 per 15. Sarah Shaw, Winthrop, N. Y.

Don't Monkey with Cross Bees.

Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Tested, in May, $1.25; untested, 75c; 3 or more at $1 and 65c each. Send for 40-page catalog, information to beginners, etc., free.
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L. C. Woodman, Grand Rapids, Mich.

NUCLEI FOR SALE. Three-frame nuclei on Langstroth frame, $2.25; two-frame, $1.85, with queen.
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500 Early Queens for April and May shipment, either *Imported* or *Golden* Italian. Untested queens, 75c each; 6 for $4.00; 12 for $7.00. Circular free.
CHAS. D. DUVALL, Hamilton, N. C.

3c a lb. Advance on Comb Foundation
Both wholesale and retail, taking effect April 20th, is announced by
Chas. Dadant & Son, - Hamilton, Ill.

FOR SALE.—An apiary of 75 colonies in new eight-frame D. hives; run for comb honey; situated on block of three acres with lovely home; in town. Also other valuable town property and stock of merchandise. Would exchange for valuable farm in middle Tennessee. Northern parties contemplating coming South will find this a valuable investment.
R. V. GOSS, Carbon Hill, Ala.

FOR SALE.—Ten strong swarms of Italian bees in Simplicity hives, at $5.00 per swarm. Also Barred Plymouth Rock eggs, 75c per 13.
E. R. GIBBS, Norwalk, Ohio.

J. ROSEN KRATZ,
Breeder of Belgium Hares, Homing Pigeons, and Dutches Pigeons.
HATFIELD, PENNSYLVANIA.

UNTESTED ITALIAN QUEENS 70 cents each, 3 for $2.00; tested, $1.00 each. Satisfaction guaranteed by return mail. THEODORE BENDER, Canton, Ohio.

WANTED.—To exchange 150 cases empty cans (two in a case) in good condition, for comb or extracted honey at market prices, 1898 crop. Price, per case, 25c, f. o. b. Pittsburgh, Pa.
M. H. TWEED, 1135 Liberty St., Pittsburgh, Pa.

QUEENS. Untested, either 3 or 5 banded, 75c each. My bees are as good as any in this country.
DANIEL WURTH, Falmouth, Rush Co., Ind.

Ours is the Most Complete Department Nursery in the U. S. Can supply all your wants from **Flower and Vegetable Seeds to Street Trees** at low rates. We publish one of the leading Seed, Plant and Tree Catalogues issued, which will be mailed **free.** Send for it now, it will save you money. Try us, can refer you to customers in every state and territory in the Union. Forty-three years of square dealing has made us patrons and friends far and near. Have hundreds of carloads of

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We send by **mail postpaid, Seeds, Bulbs, Plants, Roses, Small Trees, Etc.** Safe arrival and satisfaction guaranteed; larger by express or freight. 44th year. 32 greenhouses. 1000 acres.

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BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity —one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

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We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

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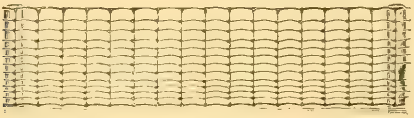

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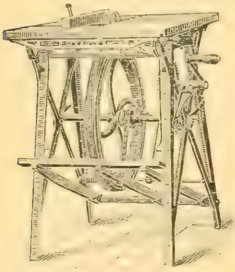

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This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, boxes, etc. *Machines on trial.* Send for illustrated catalogue and prices.

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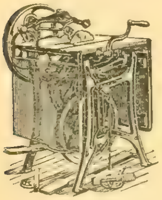

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Some fine hives of Italian bees, containing queens, brood, and eight frames—either Hoffman or Simplicity. Price, each, $3.50. Address

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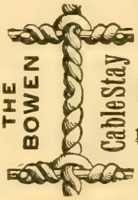

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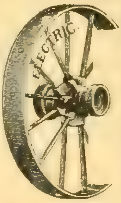

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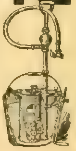

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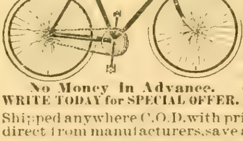

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All brand new models.
$75 'Oakwood' for $32.50
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Others at $15, $17 and $20
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Honey Column.

CITY MARKETS.

DENVER.—Our honey market is improving all the time on our brand of honey. We are selling the best grade of comb honey put up in cartons at 11½c. Merchants are learning the advantage of having comb honey put up in this way, and it is increasing our sales very much. We handle and put up only the best grade in our cartons. The demand for white extracted is increasing all the time. We are putting it up in style jars that will sell. Can quote prices in quantity at 6c for best grade of white. Could handle a quantity of beeswax at 30c for choice yellow.

R. K. & J. C. FRISBEE,
May 21. Lock Box 1014, Denver, Col.

NEW YORK.—Comb honey is about cleaned up with the exception of a few odds and ends remaining. New extracted Southern arriving freely now, and common grade sells at 48@50 per gal.; better grades from 55@60 per gal. Beeswax in good demand, and sells on arrival at 28@29 per lb.

HILDRETH BROS. & SEGELKEN,
May 24. 120-122 W. Broadway, New York.

BUFFALO.—Fancy honey, 10½@11; A No. 1, 10@10½; No. 1, 9@10; No. 2, 7@8; No. 3, 6@6½; buckwheat, 5@7; strained, 5@5½; extracted, in jelly-tumblers, 75@80 per dozen; beeswax, 27@29 Wax scarce and in very good demand. Demand for honey good for this time of the year. Medium grades selling better than fancy.

May 20. W. C. TOWNSEND, Buffalo, N. Y.

BOSTON.—The demand has dropped to practically nothing, and stocks are well reduced. There is a good demand for pure beeswax, and at present it would bring 30c. Fancy white comb honey, in cartons, 13; A No. 1, in glass-front cases, 12; No. 1, in glass-front cases, 11; No. 2, 9@10. BLAKE, SCOTT & LEE,
May 19. Boston, Mass.

CHICAGO.—Very little call for honey, and the offerings also limited. Prices without change from late quotations. California extracted sells well and the stocks here are light. Weather now warm, and prospects generally report good in the surrounding States. Beeswax scarce, and 27@30c is bid for it

R. A. BURNETT & CO.,
May 19. 163 South Water St., Chicago, Ill.

ST. LOUIS.—The demand for comb honey is light. Dark comb, 4@5; amber, 5@5½; white, 6@7, and slow sale. Extracted, in cans, 3½ for amber; 4 for white; in barrels, dark, 2½@3; light, 3¼. Beeswax, prime, 27; choice, 27. WESTCOTT COM. CO.
May 19. St. Louis, Mo.

MINNEAPOLIS.—No radical changes in prices or demand. Dealers not very heavily stocked. Market capable of disposing of good amount.

S. H. HALL & CO.,
May 19. Minneapolis, Minn.

PHILADELPHIA.—Some poorer grades as, No. 1, selling at 10c; No. 2, 8@9; extracted dark, 4¼; amber, 5; light, 5½; beeswax active at 28. Honey market very dull. We are producers of honey—do not sell on commission. WM. A. SELSER.
May 19. 10 Vine St., Philadelphia, Pa.

KANSAS CITY.—The supply of 1897 comb and extracted is about all sold; considerable inquiry for new comb. Something fancy would bring a good price. Would advise shipments. C. C. CLEMONS & CO.
May 19. Kansas City, Mo.

DETROIT.—There is no comb honey worth quoting in sight, and what is here is selling at what is offered. The market will be bare for the new crop. Extracted white, 4@5½; beeswax, 27@28, and in light supply.

May 10. M. H. HUNT, Bell Branch, Mich.

CHICAGO. — Fancy white comb, 11@11½; A No. 1 white, 10½@11· amber, 8@9; dark, 7@8; water-white extracted, 5½@6; light amber, 4½@5; amber dark, 4@4½; wax, 27@28. AMERICAN BROKERAGE CO.,
May 26. Chicago, Ill.

COLUMBUS.—Fancy white, 11; No. 1, 10; No. 2, 8@9; amber 7@8; buckwheat, 6.

THE COLUMBUS COMMISSION & STORAGE CO.,
May 23. 409-413 N. High St., Columbus, O.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, $1.00 each; 3 for $2.50; per dozen, $9.00; select warranted, $1.25; select tested breeder, $2.00; strong 3-frame nucleus, with select tested breeder, $3.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

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IF YOU WANT

Your orders for untested Italian queens to be filled with the **best queens** and by **return mail** send to

J. W. K. Shaw & Co., Loreauville, La.

Untested, 65 cts.; $7.00 per dozen. Tested, $1.00; $10.00 per dozen. Every queen warranted. Send for price list.

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Daughters of best imported Italian queen mother, warranted purely mated to drones of imported stock from a different source; hence, a direct cross. Twelve years as a honey-producer on a large scale has taught me what good queens mean to the producer as well as how to rear them. Price of queens, 50 cts. each. Safe delivery and satisfaction, or money refunded.

L. H. ROBEY, Worthington, W. Va.

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Why, that full-page advertisement of the *American Bee Journal*, on page 289 of GLEANINGS for April 15? That offer is still open. Better turn back to it, and read it. It will pay you. Send your address for *free* sample copy of the old weekly *American Bee Journal*, and also get information about our fine bee-book offer.

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ILLUSTRATED SEMI-MONTHLY
Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. JUNE 1, 1898. NO. 11.

STRAY STRAWS FROM DR C. C. MILLER

MAY 18, in apple-bloom, I counted 188 bees in a minute entering a hive, and some got in without being counted. A weak colony had 30 in a minute.

F. A. GEMMILL reports in *C. B. J.* that he wintered a very strong colony on four L. combs of sealed honey. They wintered extra well, showing little desire to fly after 3½ months' confinement.

SWEET CLOVER grows luxuriantly at the marble quarries in Vermont on heaps of waste where it's nothing but marble to the depth of 20 feet, says J. E. Crane, in *Review*. No wonder lime is recommended for sweet clover.

J. E. CRANE thinks the swarming propensity can be bred out of bees with less labor and time than it has taken to get non-sitting hens. *Review*, 136. The simple fact that bees differ greatly as swarmers makes the case look hopeful.

HASTY says in *Review* he won't have his picture taken, because when he did the picture always looked sleepy. The idea of a man looking sleepy who writes so wide-awake! Say, Hasty, you'll have to show us the picture if you don't want your reputation for veracity shattered.

A SCREWDRIVER is too thick and blunt to take off supers. I had one ground sharp, the bevel running back more than an inch, and it is tiptop. But I'm ready for a better general tool. [Such a screwdriver would be far better than one with the regulation point, I am very sure.—ED.]

"THE INDICATIONS are that there is to be a return of good seasons," says Editor Hutchinson. Quite possibly, my esteemed friend; but you don't know a thing more about it than when you thought they were gone for good. [But, "allee samee," we will hope friend Hutchinson is right.—ED.]

FULL EIGHT DAYS after a queen is shut away from a brood-comb, every cell of brood is sealed, says Aikin, *A. B. J.*, 277. That doesn't agree with the common statement that bees are fed 6 days; but some of the best authorities now give 5 days as the time of feeding.

WHEN TRYING TO EXPLAIN how a queen can see to lay in the right place on the opposite side of the comb, why not decide that she simply takes the warmest spot for her laying? [There may be something in this.—ED.]

"THE MAN WHO rides hobbies and runs after fads in bee culture will have a lean bank account," says L. W. Lighty, in *American Gardening*. Well, yes, if he does too much at it; but if he steers entirely clear of hobbies and fads for the space of 20 years, his bank account may be still leaner.

GERMAN-AMERICANS who prefer to read in their beloved native tongue will be glad know that a bee-book with American methods has been written and published in the German language by J. F. Eggers, Grand Island, Neb. Except the statement that a queen takes 16 to 17 days from the egg, it is up to date.

"OUR GIRLS will fill an Ideal in less time than they will a T super."—Footnote, p. 388. Would you mind telling us, Mr. Editor, how long it takes them to fill a T super? [We have not kept any record, doctor. All we know is, one may be filled in less time than the other. I will ask them to keep track next time.—ED.]

B. A. HODSELL says it is a sad mistake to cut alfalfa before it blooms, *A. B. J.*, p. 285. About 20,000 steers are brought into his Arizona valley annually, to be fed on alfalfa hay, and stockmen agree that the hay fattens best when cut a week after blooming. When cut in bloom it is eaten greedily, but is too washy to fatten satisfactorily; and if cut when the seed is nearly ripe it is too woody.

I AM ASKED by the editor, p. 378, to explain why sugar and honey, when eaten, produce different effects upon the mucous membrane of the nostrils. I should hardly have the spirit of a true bee-keeper if I were not willing to impart information, and I'm glad the day is past when the medical profession think it necessary to surround themselves with an air of secret mystery. I would just enjoy, Mr. Editor, taking up the space to explain the whole matter, but really I don't know, myself. [Doctor, you are provoking.—ED.]

My bottom starters in sections are ⅝. The bees seem to gnaw down a shallow starter more. I have some trouble with starters curling over, but not much. There's ¼ inch or less between top and bottom starters, and the first thing the bees do is to fasten the two together. Then they can't topple over. [Starters ⅝ inch high! In our locality every one would tumble over. Say, doctor, do you use brood foundation, or what, for these bottom strips?—Ed.]

I'm afraid, Ernest, you'll be misunderstood in that footnote, p. 391. There's no essence, not even the smallest dilution, of Christianity in the most intelligent selfishness, so long as it has only self in view. [Perhaps so; but in the sense in which I use the word "selfishness" it is a little different from the sense in which it is ordinarily used. I meant the kind of selfishness—well, if I go to splitting hairs on fine distinctions I am afraid I shall be more misunderstood than ever.—Ed.]

When I got some 18-to-the-foot foundation I said, "Why in the world have they sent me just common thin foundation?" and I had to look some time before I realized that the secret was in the very thin septum. At a hasty glance it looks just like common thin foundation. It is a big thing, if it works right. [Yes, the 18-foot article looks like any ordinary thin; but there is a decided difference in the thickness of the bases when tested by a delicate micrometer. Of course, the scales show a difference.—Ed.]

R. C. Reed, 30 miles south of Medina, who has now 150 colonies, has been using tall narrow sections (5⅛x4½x1½) for 13 years without separators, and he thinks he has not more than 100 bulged sections in a ton. W. B. Ranson, the man who uses no separators, and depends on level hives, had 21 bulgers in 1000; but 7 of these were baits. Is it just possible, if we knew how, we could discard both fence and separator? [Yes, I think it barely possible that the expert bee-keeper *might* do so; but the beginner and the careless, never.—Ed.]

"I cover my sections with an inner cleated cover with a bee-space. The wax in sections is sometimes brought almost to the melting-point beneath single board covers."—R. C. Aikin, *American Bee Journal*, 277. Every now and then it comes to light that some practical bee-keeper is using a cover with dead air-space, covered with tin, and it seems a little strange that manufacturers offer nothing of the kind. [Any bee-keeper may get the same thing by taking our ordinary ventilated cover and closing up the two side openings. This would leave the dead air space over the thin cover. But is not ventilation preferable to dead hot air?—Ed.]

Honey shortcake.—Sift together three cupfuls of flour, two teaspoonfuls of baking-powder, and a teaspoon of salt. Put two rounded tablespoonfuls of butter into the flour, mix with one and one-half cupfuls of milk. Roll out quickly on a slightly floured board, and bake in a quick oven for twenty minutes. When baked, split open while hot, using two forks placed back to back; spread the lower half with butter, and the upper half with a half-pound of finely flavored honey. If the honey is too hard to spread easily it should be slightly warmed. Let the shortcake stand for a few moments after spreading, that the honey may melt gradually and the flavor permeate the cake. Serve with milk, or cream if you have it.—*Chicago Record.*

Judge Hasty has pronounced sentence of fine and imprisonment on E. R. Root for libel, accusing said Hasty of consuming an unreasonable amount of honey, when he used only 12 ounces daily, 2 meals, 6 ounces each. He now meditates coming down to one meal a day. Let's see—say 3 months at 6 ounces per day, about 34 lbs. of honey. Might cost less to buy a pistol, Hasty. [If Hasty can eat even 12 ounces of honey daily, I will not retract — not one bit. About 2 or 3 ounces a day, 3 or 4 times a week, would be a great plenty for me.—Ed.]

It's only fair to say that I've had a good many colonies swarm with two stories, sometimes with little but empty combs in the lower story. [Yes, doctor, but hadn't the colony got into the craze for swarming *before* you gave them the extra room? Here is a condition: A colony at our out-yard has a clipped queen. It has tried twice, neighbors tell me, to swarm. I went down, scattered their brood in two stories, and gave them empty combs between the frames of brood; destroyed all the queen-cells, and yet the neighbors tell me these bees have been trying to swarm just the same; that is, they fly out and then back again. But if this colony had in the first place been in quarters large enough to hold them, so that the notion of swarming did not get possession of them, they would, if I had gone down and given them more room, have never thought of swarming the whole season. My experience is that, if a colony gets into the notion of swarming, it is almost impossible to get that notion out of them until they have had a good swarming-out, and landed in new quarters.—Ed.]

W. B. Ranson, instead of using a single bait in a super, proposes to use a full super of baits; then when the colony gets started on the second super (with foundation), move the bait-super to a new hive, and so on. It will probably work all right with enough baits, providing colonies are not equal in strength. And it's possible that it will not be necessary to get a colony started in empty super before removing baits; for, once started in bait-super, they might promptly occupy any thing taking its place. [I believe Ranson's plan is all right. I have noticed this: That, when a colony once gets started in the first super, it seems to be much easier for it to go into other supers, whether bait is used or not; and, right here, this disinclination on the part of the bees to go into the ordinary comb-honey supers containing little bits of rooms, as it were, boxed off tight, led me to believe that the bees might be more ready to accept a comb-honey super permitting free passageways back and forth and sidewise, on the principle of the plain section and fence. Now, understand I do not say positively that the bees will go into such a super sooner. It is quite necessary for me to be emphatic on these points, as some chap may be setting up another man of straw, and then knocking it over again.—ED.]

GENERAL CORRESPONDENCE

RIPENED HONEY.

Dan White's Ripened Honey; Extracting Before Honey is Sealed; More Hot Shot.

BY DELOS WOOD.

On page 125, Feb. 15, 1898, Dan White complains of all bee-keepers who extract honey before the bees have sealed it, and gives hot shot, but fails to point his gun in the proper direction. His article is a good one, and will bear careful study, even by himself. There have been so few writers who advocate extracting unsealed honey that I can not call the names of any of them. I, for one of those hit by Mr. White's bombs, am willing to join hands with him in condemnation of putting thin, watery, or unripe honey on the market. "The everlasting footnote" to Mr. White's article says we should "agree not to put on the market extracted honey weighing less than 11 lbs. to the gallon." That is too thin and watery for me, Mr. Editor. Honey that does not weigh 12 lbs. to the gallon is not well ripened. Weigh that "over at the house" and you will find it about 13 lbs.

On p. 249, April 1, in "California Echoes," J. H. Martin gives a kick especially aimed at the California bee-keepers who extract before sealing. His paragraph saying "Thin honey is liable to sour, and more or less of it will be a dead loss, the flavor raw and unpalatable, etc.," is correct; and any one selling such an article will soon ruin his market. In another place he says, "It is pure shiftlessness to produce unripe honey." This, if taken just as it reads by itself, can not be objected to; but, taken in connection with what precedes it, I infer that it is a mere kick at extracting before the honey is sealed.

Now, in reply to both of these articles I would ask, "Who has ever advocated putting unripe honey on the market?" I never have, and am willing that every buyer and user of honey may know that I advocate and practice extracting honey before it has been sealed by the bees; but I have never sold a pound of *unripe* honey since I quit selling comb honey. I have never sold a can of extracted honey that did not weigh 12 lbs. or over to the gallon. In a lot of two tons, sent to a commission house in San Francisco a few years ago, in 5-gallon tin cans, the net-weight returns showed 63 lbs. per can. This honey was taken as fast as the bees stored it, not waiting for any to be sealed, and ripened in the sun, and sold a fraction above market quotations. I always put my name and address on every case shipped, and have never received one complaint of sour or unripe honey.

Who sells unripe, watery, or sour honey? It is those who wait for the bees to seal their honey. Then they honestly think they can join Dan White's society. Bees are like some farmers. When work is pressing, every thing is done in a hurry. Example: The farmer in the East, where summer rains abound, has a large lot of hay cut, and a rain is threatened. That hay is hustled into the barn as soon as he thinks it will do. If he fears it is not well cured he perhaps will dose it with salt, and in goes another load, and so on until the last is well sprinkled with rain. Result: That hay heats, sweats too much, molds, and is unfit for market.

Bees are rushed by the enormous honey-flow at times, and they go it pellmell, slap, kick 'em off, get done quick, *a la* Coggshall, and seal their honey before it has had time to evaporate or ripen. The comb-honey man takes off the nice ripe honey (?) while it is white, and sells the watery stuff. The man who works for extracted has waited until all is sealed, and he honestly thinks it is well ripened. He uncaps and extracts, and runs the honey direct from the extractor into the can, and sells it, and these are the ones who are selling unripe honey weighing 11 lbs. per gallon. When honey is sealed it ripens very slowly, and this is why E. R. Root once advocated leaving it on the hive until travel-stained.

I have cut open well-sealed honey, stored in May and June, and kept on the hive until winter, that would run from the combs almost as fast as water, and would smell strongly of vinegar. Was it well ripened?

It would take a long article to tell what constitutes well-ripened honey, and how to produce it, and I will not attempt it at present, as you may condemn this to the waste-basket; but if you do not, you may put a No. 10 double-soled footnote to it.

In conclusion I wish to say that, in my opinion, any one who runs honey direct from the extractor into the cans, no matter if every cell is sealed, is liable at times to put unripe honey on the market.

Santa Barbara, Cal.

[There is a good deal of truth in what you say. May be it is all truth. If so, it only goes to show that your conditions, so far as ripening honey is concerned, are different from what they are in Ohio. I do not think I ever saw the time when sealed honey in Ohio was unripe; but I can imagine that the bees might pour the honey into combs pellmell, and seal it before it is really ripe. If that were the case, then of course the honey ought not to go from the extractor into the marketing-cans or barrels, but should, on the other hand, as you imply, go into evaporating-cans, there to remain until it has attained the proper consistency.

You ask me to weigh that honey "over at the house," that you think will run about 13 lbs. I did do that, friend Wood, and just as it comes from the can, and presumably as it came from your people on the Pacific slope; but I find it weighs 12 lbs. to the gallon. I thought it would go nearly 13; but even at the 12-pound mark it is very nice and thick. I could get it to the 13-pound mark by letting it stand in an open vessel for days at a time.

Why, friend Wood, we in Ohio consider 11 lbs. a fair specific gravity; and in our climate I doubt whether it is possible to ripen it in the hive so it will be thicker than this. We can run it up to 12 lbs., and perhaps 13, by letting it stand in a dry place in an open vessel. During the last three or four weeks we have been having a spell of weather during which the honey would get *thinner* rather than thicker. Nearly every thing has been reeking with dampness from frequent rains, fogs, etc. This condition does not generally prevail; but our atmosphere is by no means as dry as it is in California, and I doubt whether it is possible for us to raise the specific gravity of honey much above the 11-pound mark.

In speaking of California honey, I never saw any thing yet that came from cans that was thicker than 12 lbs. to the gallon. I am not saying that you West Coasters can not or do not produce 13 pound honey; but I am one of those chaps who are very fond of thick waxy honey; and if you have something that runs 13 and 14 lbs., I wish you would send me a sample. I will pay express, and give it the best write-up I know how.—Ed.]

* * *

FEEDERS.

Entrance Feeders for Spring Feeding.

BY F. BOOMHOWER.

It is out of season for the use of feeders now, as bees in this latitude are all packed for winter, and, of course, they were provided with sufficient stores for winter; but when work does not need doing is the time to think and prepare for the time when it does need doing; and when spring comes, and when feeding is needed, we shall be ready for it.

Success in feeding depends mostly on the feeder used. Of course, if we save over sealed combs of honey a feeder is of no consequence, as it is a very easy matter to lift out the empty combs from the needy colonies and replace them with full combs of honey; but when we have not the combs of honey, and feeding is necessary, a feeder of some kind will be needed.

I do not think that feeding done by combs is as good as entrance feeding, for stimulating or inducing the queen to lay; for if the bees have to carry it from the entrance it seems more natural, and has more of a tendency to set the queen to laying more rapidly. I think a large per cent of the feeding done results in nearly as much injury as good.

I know a bee-keeper, and one who thinks he is a practical one too, and I have seen him feed colonies of bees by pouring as much as a quart of extracted honey on top of the brood-frames, and allowing it to run down over the cluster of bees, besmearing them all over; and I have known of instances where the bees have left the hive, and clustered under the bottom-board until the honey had been drained out and cleaned up by the bees. Now, if practical bee-keepers will do such work I should like to know what you call an unpractical one.

Feeders must be so constructed that the bees can not possibly get daubed with the feed. I once thought that was easy to accomplish, but it was not so easy as I thought.

The most common kind of feeders are those with slats and floats. Take any of this kind of feeders, and even combs filled with feed, and watch the bees as they all hurry to get a share. At first, when only a few are feeding, they take their time and sip leisurely, as if they had lots of time and room. Soon they gather faster; the number increases, and they commence to scramble and tumble over each other, falling into the feed, and getting daubed and smeared. Those at the bottom, which were there first, get pressed and crushed down into the feed; and as each bee makes its escape up through the mass it wipes its wings, feet, and body off upon its companions' fine clothes, and this process is kept up until the whole mass becomes smeared and daubed up with the disagreeable sticky feed.

I will explain a feeder that I believe to be the best adapted for this kind of feeding. It allows the syrup to be fed a little at a time; and when the feeders are empty they can be seen at a glance without looking into the hive and disturbing the bees. In an apiary of 100 colonies you can tell what feeders are empty, or the amount they contain, in almost a minute's time, just by glancing down the rows and walking across one end of the apiary.

For spring feeding, an entrance feeder is altogether the best. A Mason fruit-jar holding two quarts, with a tin screw top, and by perforating the top with small holes made with an awl; a thin box about 1½ inches deep and 5 inches square, with one end open, with a tin bottom, and projecting strips at the open end to project into the entrance; a wooden top with a circular hole cut in large enough to permit the top of the jar to just fit in; the projecting strips made to fit snugly in the entrance, will hold the feeder in place. No robber bees can get at the feed without going into the hive to get it.

I think Mr. Boardman is the originator of this feeder, or one something like it, and it is old, but it is a good one, and worthy of being described again.

For feed, many use an equal proportion of granulated sugar and water, the sugar being made to dissolve by rapid stirring; but when we can get extracted honey as cheap as sugar, I think it more profitable to use the later or extracted honey. Some may think it unnecessary and unprofitable to feed when they already have honey (I mean in the latter part of the spring); but by feeding at the proper time it stimulates them and sets the queen to laying more vigorously, and that means a lot of bees, and a lot of bees means a lot of honey when the flow comes, and certainly we should not be out any thing, for what we feed the bees makes them put the same amount in the surplus, and practically makes us a gainer instead of a loser, if we get for comb honey 8 cents per lb., and feed for 4¼ cents. I do not mean to feed them to have them put the same feed into the surplus, but the feed goes into the hive-body, and fills up the vacant room; and when the flow comes they put into the surplus what they would have put into the hive-body if they had not been fed; and if we can get the hive-body filled by feeding we can get them to put into the surplus the whole amount they gather.

Some may think that, by feeding, they will fill the brood-nest and crowd the queen; but if there is a flow of honey, and surplus room to store it, they will give the queen abundant room for laying.

Gallupville, N. Y.

[The feeder mentioned by friend Boomhower is the same in principle as the Boardman, with this difference, that Mr. Boomhower punches holes in the cap, and Mr Boardman uses the Hains idea; namely, letting the cap down into a shallow tray. Having tried both methods, we prefer the Hains plan.

The subject of feeding and feeders may seem a little out of date at this time of year; but in many localities I believe feeding can be practiced to good advantage. In some cases colonies run almost from hand to mouth for stores. They are then liable to cut down on brood-rearing. If, on the other hand, they are fed a little every day, the hive will be filled with brood, and the brood-nest with honey or syrup, as the case may be. When the harvest comes on, the best and choicest honey necessarily has to go into the supers, because there is no other place to store it; and, moreover, there is a big force of young bees, or ought to be, ready for the fields. Without this extra feeding the colony in question might have been only half as strong, and ill prepared for a flow of honey.—ED.]

SMOKER FUEL.

Setting down to Work with Bees.

BY MRS. L. HARRISON.

Mr. Editor:—You want to know what we burn in our smokers, do you? Being a woman, old cotton cloth is in my line, so I roll it up into a compact roll, and tie it at short distances, so if one tie burns off there is another near, preventing its unrolling. When I clean house, and overhaul my closets I make enough to last during the season. Other fuel may be better, but I follow the advice of the poet Longfellow who says:

> Take whatever lieth nearest you,
> And make from this thy work of art.

SITTING AT WORK.

Yes, I do. I first take a smoker that has previously been cleaned, light my roll of rags, making a good smoke; get a tool to lift up the frames, and proceed to a hive. We use the eight-frame Langstroth, with a cap with a separate cover. First take off the cover, then the cap, and put the cover on it at the side of the hive, and sit down. If I've been careful, the bees have not been disturbed, and then I lift up a corner of the sheet and give them a puff of smoke as an invitation to be civil. If I stood up, my back would soon ache. I should drop things, get nervous, and the bees would soon find it out, and I should soon have a pretty kettle of fish. I live in a city with near neighbors, and I have to be very careful not to irritate my bees. If I lived far away from other people I should not care how cross they were provided they were good honey-gatherers. Sitting down I take things easier, am not in such a hurry; take time for the bees to get away, and they soon act as if they believed I didn't want to hurt them.

SELLING HONEY.

During the winter, honey sold from 12½ to 13 cts. per pound in this city; later on, a lot was shipped from California to the commission houses, which they offered for 10 cts. per pound. Bro. Root, do Californians eat any honey? Did you see it on their tables when you were there?

If honey ever becomes a staple article of food, producers will have to turn peddlers. See how persistent some manufacturers are to introduce their wares; for instance, the yeast-makers. Year after year they distribute free samples. When I returned from Florida I found considerable honey in the honey-house. I asked the milkman, who comes daily the year round, if he had had honey lately. The man who laid the carpets, I told to take some honey as well as money for his work; some honey along with money for furniture; the milliner also. In this way I find customers who buy of me yearly.

Who ever saw honey on a bulletin-board at a restaurant, or on a bill of fare at a hotel? Why should not extracted honey be an army ration, as well as syrup? All that I buy supplies of must be sweetened with honey; so must my dentist, chiropodist, Turkish-bath assistant, minister, and I'll feed the tramp who wants a meal on honey. When I've created a demand for honey, along will come a fellow and undersell me. Early last fall I went to a grocer I had been in the habit of supplying. I said, "I see you have honey." It was the choicest of honey in a neat painted case. "Oh, yes! a fellow brought this from a near town, and offered it for eight cents per pound. I didn't jew him at all; it was his own offer, and that honey was worth 14 cts. per pound."

Our country is great. I gathered beautiful goldenrod on Black's Island, in St. Joseph's Bay, Florida, on April 4th. The China-berry trees were in full bloom there also. Pigs on the island were fat by rooting out and eating artichokes.

Peoria, Ill.

[Dear Mrs. H., I did find honey on the tables in California; that is, when I visited a beekeeper they almost always had some nice honey. But I did not find it at the hotels and restaurants. I did not see it on the bulletin-boards. There were all sorts of syrups, and stuff called maple molasses, but not honey; and yet in my opinion—that is, it is my opinion just now, and I may change — the water-white mountain-sage honey of California is the finest in the world; and it agrees with me the best of any sweet I ever got hold of. I have been eating it considerably this spring, and it agrees with me better than any other sweet, especially if I do not eat more than, say, one teaspoonful at a meal. We have just had a carload from R. Wilkin. Even in hot weather, if you dip your spoon into the dish all over you can get quite a good lot of honey at what is called a spoonful. It is so well ripened that it is thick when put on the table even in June, and it does not candy. I think it is a little more digestible after it has been sterilized by heating it almost to the boiling-point. Why the California hotels, restaurants, and boarding-houses should not consume a larger part of their own product is a conundrum. Perhaps if the honey-producers of California would "sweeten the men" they deal with right around home (as *you* do) it might come into more general use. But then, you know they have tons and tons of it. Friend Wilkin has had to build a cistern to hold it all — at least the papers say so; but he says it is not so.—A. I. R.]

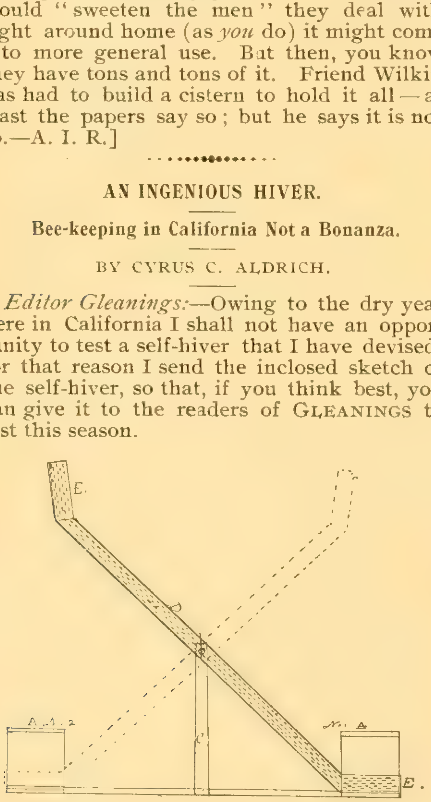
* * *

AN INGENIOUS HIVER.

Bee-keeping in California Not a Bonanza.

BY CYRUS C. ALDRICH.

Editor Gleanings:—Owing to the dry year here in California I shall not have an opportunity to test a self-hiver that I have devised; for that reason I send the inclosed sketch of the self-hiver, so that, if you think best, you can give it to the readers of GLEANINGS to test this season.



The following is a description, and the manner of operation. Like letters refer to like parts.

A A are the hives, spaced a certain distance apart by the board B. In the center of the board B is an upright standard, C. D is a wooden tube 3 inches square, having one side closed by perforated zinc or wire cloth. E E are made to fit to the fronts of the hives, A being made of wood, with queen-excluding zinc in front, and a slide (not shown) in the rear. The slides are connected by a wire, so that, when one is open, the other is closed.

The manner of operating is as follows: No. 1 A is a hive expecting to swarm. As a swarm issues, the queen is prevented going with the swarm by the excluder E; and as it is her disposition to go up when confined, she follows up the tube to the other excluder. Upon the swarm returning, the queen will be found; and it will cluster on excluder E; and as the tube D is balanced, the weight of the swarm brings the excluder E to the empty hive A, No. 2, the slide being opened by the action of the tube D.

As an argument in favor of specialty in bee-keeping, I wish to give the following illustration.

At Elsinore, Riverside Co., Cal., are thirty bee-keepers who get their mail at that office. Of that thirty, not more than ten take any pains to keep posted in bee-literature, the markets, or the management of their bees.

The twenty who do not advance the interests of bee-keeping fix the market price of those who produce the best and the most of the honey, to the detriment of themselves and the business of bee-keeping.

While I am opposed to giving the reports of large yields of honey that are often given, because of the influence it has in making the latter class more numerous, I wish to give some facts to prove that it pays to do any thing well if done at all.

Mr. John Holman and Chas. Hough, who make a specialty of bee-keeping, have taken over 100 pounds of first-class comb honey to the colony (spring count), and that in apiaries of nearly 200 colonies in one location. Others with equally good locations, who mix up bee-keeping with other pursuits, have not taken half that amount of comb, and, where extracted, not to exceed 100 pounds to the colony; and, owing to the same influences, they have sold their extracted honey for 2 and 3 cents a pound, and their comb for 5 and 6 cents, which does not leave much after paying for packages. With such prices, and the prospect of a dry year here in California, but little if any thing will be left after the bees are fed.

Taking every thing into consideration, bee-keeping in California is not a bonanza unless every advantage is taken in the industry.

[Twenty years ago and more, perhaps, A. I. R. had rigged up in our old yard a device embodying somewhat the same principle. It was a long pole pivoted after the manner of the well-sweeps that were once used for hauling up the "old oaken buckets" from wells. One end of the pole stood up high in the air, and the other end, weighted, came in contact with the ground. To the upper end was attached a twig or limb on which a swarm had previously clustered. It was calculated that, when a swarm came out, it would would seek this limb on the aforesaid pole, having the scent of the previous swarm and that of the queen. As the bees began to cluster, their weight, continually increasing, would overbalance the pole and cause it to dump the cluster into a hive just beneath. A pistol was attached to the rigging, so that, whenever a pole took a "dump," the pistol would go off, and inform the owner, who would close the hive up, take it away, and put another one in its place. The theory was all right, but the practice was bad; at least, I do not remember that it ever worked. Mr. Aldrich's idea, if it works free enough and easy enough, I am sure would deposit the swarm in hive No. 2. But there is just one serious objection to it: It would take a big lot of machinery for hiving swarms in a whole apiary that are expected to come out. As a novelty and as a curiosity it can, however, be tried with one colony.

As to bee-keeping in California, the prices have gone down so very low that I do not suppose the business is as profitable as it once was. Still, there are quite a number of prominent bee-keepers who are, I believe, making a fairly good thing of it.—ED.]

THE ONTARIO COUNTY BEE-KEEPERS' CONVENTION.

History of the Honey-bee; Honey, and its Uses in Early Times; an Interesting Article.

BY F. GREINER.

From an essay on the "History of the Honey-bee," read before the convention, I take the following:

It is now an undisputed fact that bees were in existence long before man. Petrified (or fossil) bees, *Apis adamitica*, have been found in numerous instances, here in a stone-quarry, there in the amber deposits, showing that bees are not a late production of nature. We have also evidence that, in prehistoric times, among a people that must have been in existence then (judging from the remains of their work, tools, etc., found, honey-strainers among other things), bee keeping was a branch of their industry. What kind of bees these people kept has, however, not been determined. The writers of later ages, and of times long past, have not made quite the distinctions between different races that we do to-day, although Virgil, Aristotle, and others mention bees of a dark and of a light or yellow color. It seems to have been the principal aim of the ancient Germans, and, in fact, of the people in general, inhabiting North Europe, to produce honey for the purpose of converting it into a drink, evidently intoxicating. This tendency may be followed, like a red stripe in a carpet, from remote times. In the German mythology this drink, *met*, is mentioned a thousand times in the poetry of that time, although nothing is said about bees and bee-keeping.

The German bee is common all over the northern part of Europe. It is of a dark brown or nearly black color. This bee is not alike all over the territory named. Evolution has brought about slight changes according to existing environments, and so we find a number of different strains. First, the common brown bee, the same as we have here, the bee that was imported into America by the immigrants. In the heath sections of Germany we find the heath bee, resembling the first named exactly in outward appearance, but differing from it in their great disposition to swarm. It may truly be called a swarming bee. Vogel claims the heath bee, when brought into different surroundings, will acclimate itself in a few years and lose this swarming tendency.

In the mountains of Carniola we find a gray bee with a possibly slight admixture of yellow blood. It very nearly resembles our common brown bee. This Carniolan bee has been imported into America.

Going southeast we have the Caucasian bee, so named from the mountainous region, Caucasus, where it is found. It is a dark bee, possibly a cross between an eastern and western bee.

The Smyrnian bee of Asia may also be a cross with an oriental race. Greece has a dark bee; also Hungary and Austria, and in North Norway. In fact, many other lands or districts may be named, each having its own peculiar bee.

Genuine black bees may be found in Africa. Mention may be made of the Tunisian bees, or Punics. They are probably of oriental origin.

In examining the bees of the different lands we find the blacks predominating in Norway, Sweden, Denmark, France, Germany, Russia, Austria, Carniola, Switzerland, Tyrol, Greece, Northern Asia, Northern Africa, etc. All have a dark bee. Yellow bees we find only in Syria, Southern Spain, Italy, Cyprus, and other islands in the Mediterranean Sea.

F. Benton thinks that, since some insects have a way to protect themselves by assuming the same color as their surroundings, it is not unreasonable to suppose that bees may have done the same. And, indeed, so it would seem. Cyprus, on account of so much yellow sand, has a very yellow appearance, and her bees are the most yellow of any. The general appearance of Africa is black. She has the darkest bees. Germany, with its mountains and forests, seems dark or brown. Her bees are brown. Carniola, with her gray rocks predominating, has the gray bee.

So much about the different bees; and now for some glimpses of bee-keeping, uses of honey, etc. Bee-keeping in India may be traced back to the year 2000 B. C. It was said there that it would rain honey in the spring of the year in certain localities. To these the shepherds would drive their cows. Having fed on the sweetened grasses their milk would be so sweet as not to need any other sweetening. A baby boy received, for his first food, honey from a golden spoon (it might bother us fellows who have not been to the Klondike, to find the golden spoons).

Egypt was once the land of knowledge and culture (Moses received his education there, as will be remembered, 1500 B. C.). It abounded in honey-producing plants. The date-palm, for one, carried on a single fruit stalk as many as 12,000 nectar-yielding blossoms. The information we have from this land regarding bee-keeping in those early days is principally gleaned from the hieroglyphics on pyramids, obelisks, sphinxes, and on remains of temple walls. Honey was used to embalm the dead ; wax also for the same purpose, and to make coffins air-tight. Bee-hives were made of cane, and coated with clay. Others made them wholly of clay, and burned them. Such hives are being made, up to this day. The Egyptians practiced migratory bee-keeping at an early date. It is recorded in history that Solon, "the Wise," made a special trip from Greece to Egypt about 600 B. C. for the purpose of learning this art of bee-keeping.

Palestine abounded with bees at the time the Israelites first occupied it. The many cavities in the chalk rocks and trees furnished all the needed shelter for the bees, and the people obtained all their honey and wax by simply robbing the bees. After the advent of Christ, bees were kept in hives and in apiaries. Even a smoker had come into use, in which well-dried droppings from the cattle-yard were burned. A law is recorded forbidding the lighting of the smoker on the sabbath day (it might be well for a few of us to make a note of this).

Apiculture in Arabia seems of later origin, the people having copied from the Greeks and Romans. The first history we find in the Koran. Mohammed devotes a whole chapter in it to bees and bee-keeping. Mohammed's followers believed that honey was the principal food in "the happy land beyond."

Numerous Greek and Roman writers have given us bits of bee-history here and there. Virgil called the bees repeatedly "the children of the dead (rotten) ox." According to tradition bees might be produced at will at any time in this manner: Take a two-year-old steer (the Latin word for steer is *apis*, and so it will be seen that the word *apis* means steer as well as bee); stuff rags or the like into his nose and mouth, no matter how much he may object, and now belabor him with a club till dead, but without breaking his skin. Now let him lie till decomposed. After a time, it was said, bees would come forth from the carcass.

It seems incredible that so absurd a story as the above could have found any believers; but this is unmistakably so; for even Melancthon, the bosom friend of Dr. Martin Luther, living 1497—1560, believed it. Yes, even later writers have recorded it as a fact. However, not all the "smart men" were as ignorant of the natural history of the bee as that. Aristotle, living between 400 and 300 years B. C., does not even mention this steer-story. His knowledge was away beyond that of other mortals of his time—yes, even of our times.

When talking with a man of high education but a year or two ago on the subject of bees the conversation turned to the sources of honey. I mentioned that our bees "made the most of our honey from basswood."

"I had no idea the bees *could* make honey out of any kind of wood," was the educated man's reply, and he meant what he said.

Aristotle was well acquainted with the nature of the bee. He knew the true sex of the queen, the workers, the drone. He knew the queen laid all the eggs, knew the time of development of the different bees; he was wrong, however, in supposing the old bees to be the nurses, the young the field-workers. It is hard to understand that this knowledge that Aristotle possessed in regard to the life of the bee did not spread more, and become the property of the people; but it is a fact that, during the following 2000 years, more was forgotten than added, and this in the face of the fact that a great many bees were kept. There was Julius Cæsar, 100 — 44 B. C. All of his farms were well stocked up with bees. Others followed his example. In the eighth century, Karl the Great, reigning over a vast empire, did a great deal to promote the keeping of bees. After the Roman Catholic church had gained a foothold in Europe, the monks, in their monasteries especially, made a business of keeping bees, and induced the people to do the same. During the eleventh century the church demanded of the people the tenth of all the honey and wax harvested of wild bees, and the third from bees kept in hives. In view of this fact, what bee-keeper of to-day has any reason for complaining of high taxes?

For illuminating purposes at these times, the wax candle was the best thing obtainable, and only the rich could afford it in a limited way. Others had to be satisfied with the light of a burning pitch-pine knot. The churches in particular consumed much wax for candles. Before Luther's time the principal church in Wittenberg used for this purpose in one year 35,000 pounds of wax. This demand for wax, and for an article to sweeten foods and drinks, stimulated the bee-business to a great extent, and the number of colonies of bees increased. It is stated that, during the eleventh and twelfth centuries, whole shiploads of honey and wax were exported from Germany to Palestine via Constantinople. Regular honey-markets were held every year in the cities of Augsburg, Nürnberg, Frankfort, and Cologne. Large breweries were built, in which quantities of honey-beer were made—enough, it is stated, to subdue large city fires. I take a few items from a honey-market report, said market being held in Nürnberg in 1250.

Comb honey was offered on earthen dishes, strained honey in pails and tubs ; chunks of wax were heaped up in large piles. The honey (strained) was sold by the "seidel," and, according to a chronicle of that time, the seidel contained "fourteen mouthfuls and two fingers." Druggists were bantering for wax. Who knows, adds a later reporter, what a mixture of pulverized toad-eyes and beeswax might be good for? The city clerk needs wax for seals, and he is picking out the nicest pieces. Suddenly the business comes to a standstill, as the market-master and his crew are making the round to inspect. Honey harvested before the birthday of the Virgin Mary is not wholesome, and must not be offered for sale. The market-master receives the statement under oath that the honey is of the proper character.

The honey is also examined as to its purity. The loss of one hand was the penalty for adulteration. It seems penalties were of a severe nature. I will name another such case. Any one stealing bees or honey, and caught in the act, was, without trial, delivered to the sheriff to be executed in a most terrible way. His intestines were first wound around the tree from which he took the honey, and then he was hung to the tree.

The hives in use in those times were of a very substantial nature. Let us watch one of the keepers preparing a hive. We see him standing on a ladder about ten or twelve feet above ground, cutting a cavity from three to four feet long in a large basswood-tree. Basswood or pine was preferred, and oak rejected. If a hive was needed for immediate use, the cavity was burned out with a straw fire; if not, it was just left to dry out. It was then rubbed over with wax, an entrance-hole bored in, and a suitable door fitted against the cavity, and fastened. For centuries after this time the most popular hive in use was the hollowed-out log, three feet long, and a door fitted against each end. The honey from these was generally not harvested till the winter was over. The bee-keeper would then go to work and cut out all the comb he could, whether filled with honey or not, just leaving what was occupied with brood. After the forests had been more and more cleared off in Germany, and timber became scarce, straw hives came into use, and many bees are kept in such up to this day. The majority of the modern bee-hives are made of the more porous timbers, like pine, basswood, etc., are double-walled, opening from one or two sides, cupboard fashion, not from the top, thus making it practicable to tier up colony upon colony without inconvenience (just the thing for bee-houses). Tenement hives are much liked. Of late years a few bee-keepers are commencing to construct their hives after the English and American pattern, giving access from the top, and also using pound sections.

The subject of hives and bee-keeping in Germany has been treated more fully than that of other countries, because the writer has been more familiar with it, but has not been given as fully in the above as in the original essay.

Naples, N. Y., March 14.

SOUTH DAKOTA AS A BEE COUNTRY.

Not as Good as Some other States.

BY STEPHEN J. HARMELING.

Dear Friend Root:—Some time ago I wrote a few lines for GLEANINGS, which brought a regular shower of letters inquiring about prospects for bee-keepers in our State. I am too busy to answer these friends; and since none of the letters contained even a stamp, I can get out of it nicely if you will let this go into GLEANINGS.

I would not call Dakota a first-class bee country like Wisconsin or Eastern Iowa, except the region of the Missouri River. The bottom is just as extensive here in Dakota as in Iowa, and the flora as good. Basswood is found on it everywhere, and acres of coreopsis, heartsease, and cleome (Rocky Mountain bee-plant). There are no apiaries above Yankton, on this river. The "Jim" River, though not so rich in bee-pasturage as the Missouri, is a good average location, I should judge, as far up as Jamestown, in North Dakota.

The level prairie country is not rich in nectar-producing flora, but there seems to be a little coming on continuously until the large goldenrod blooms in August and September, when there is a heavy flow that makes bees swarm. My bees, I think, can be depended on for, say, 50 lbs. surplus on such level prairie to the average colony.

The home market for honey is good. There is no trouble in getting 12 to 15 cents for extracted. The flavor of Dakota honey is superior. That of wild mustard is delicious. Chicago has sent too much "Rose Honey" and "Bumble-bee Honey" into these markets. Chicago is really the meanest hole of a city on the face of the earth. We expect all that comes from Chicago to be adulterated. It is so notorious here, that people who have ever tasted real honey can notice something wrong, and now they suspect every thing that comes from the East, and will pay a good price for the home product, which they know to be pure.

FARMING FOR BEES.

I believe farming for bees would pay anywhere in Dakota. Land is cheap. For instance, catnip will grow here; single plants four feet in diameter, and as high, and bloom continually till frost, and bees working on it all the time. White mustard, too, could be raised, and the seed is salable. We have clear skies and slow-continued flows from many plants that will do well here. There is no better honey to winter bees on than the goldenrod of these prairies. It is ready to seal almost immediately after gathering. Any honey-plants that are indigenous to semi-arid regions will do well here, and many others besides, as mignonette, which makes a great growth, and furnishes honey all summer till cut down by heavy frosts.

WINTERING BEES.

This is not a difficult problem here. My friend Mr. D. Danielson, of Clarkston, S. D., winters right along with hardly any loss, on summer stands, in chaff hives. Last fall he placed five lots of small nuclei in a large hive with partitions, before a window upstairs in a bedroom, with small entrances through the window-sill, and they are breeding up nicely now.

Caves and cyclone-escapes are good. The earth is dry, as a rule, and the cave keeps cool and sweet. Mine stand at 42° now, and has not varied 3° all winter, and it is only a hole in the ground, 7x16, and 7 feet deep, with 3 doors, and a smokestack 6x8 in the further end.

Now, I would caution my friends not to think this the finest bee country in the world. I am probably a little over-enthusiastic; but I believe there is more money in bees than in cows, if a person will farm a little for them. Those who have asked me whether it would be advisable to move an apiary had better look the matter up carefully for themselves, though I believe a person would not make a mistake by locating on the Missouri anywhere above Yankton.

Marion, So. Dak., Apr. 7.

ABOUT WINTERING BEES.

Is There Any Thing New on This Subject?

BY HENRY ALLEY.

It is so long since I have written any thing upon apiculture for publication in any bee-paper that possibly many of the readers of this article may have forgotten the fact that I ever existed. Now that the spirit moves again, I shall try to give the readers of GLEANINGS something new about wintering bees. I have never been in favor of wintering bees on the "hot-bed" plan; that is, I have not believed in keeping bees through the winter in a place where the temperature is continuously maintained at a high point, say from 40 to 50°. That is too much on the "hot-bed" plan for me. I believe in placing bees in winter quarters in the fall as late as possible, or certainly not until winter is about to set in. Here that time is about the middle of December. On the other hand, I want to take them out on the approach of spring, and that with us is about the 20th of March.

My objection to wintering bees in a high temperature is that they can not safely be put on the summer stands in the spring until the temperature averages as high outside as that in which the bees were wintered in, or kept in from four to five months. The change from a warm to a cold place works just the same on bees as it does on tender vegetables grown under glass. Remove the glass, and down go the plants. Place the bees on the summer stand too early, and down go the bees—spring dwindling. I have tested both the vegetable and the bee experiment, and know what I am talking about.

Now, Mr. Editor, I am ready to write what I started to write when I commenced. In the fall of 1896 I arranged, as an experiment only, a small place to winter bees in. The room is about ten feet long, six wide, and five high. There is room for about 30 hives of bees if the winter-cases are removed. The wall on the west side is about 6 inches thick. The other sides are double, the inner wall being only heavy building-paper, while the outside is boarded and shingled. There is a double roof to the building, and a ventilator opening to the south between the two roofs; not much ventilation at the bottom. Floor is the plain earth. The last two years the bees were put in about the middle of December; every colony came out both years in fine condition, though the first year there was no ventilation at the top of the building, and a few combs molded a little. This year the bees were removed on the 9th day of March, and the six days following were warm and summer-like. I judged that there were about two quarts of dead bees in all, and every comb as bright and clean as in the fall. Some of the colonies commenced to carry in pollen inside of 24 hours—a fact attesting the perfect way the bees had wintered.

Now comes the point and the theory I wish to emphasize upon. There was no such thing as an even temperature in the bee house during the two winters. I did not want such a thing to be so. I wanted the temperature to vary inside as it did outside, only not to such extremes. When it was at zero outside I found it at 20 degrees inside, and that was just as I desired it. Nor did the temperature go above 45° through the winter. There will be no spring-dwindling here, and I can show as fine a lot of bees as can be found anywhere in Massachusetts.

If the winter problem had not played out, I should expect some of the "hot-bed" bee-men to pitch into me for expressing sentiments like the above. But facts are facts, and the laugh is on my side, as my theory and experiments have proved a complete success.

Wenham, Mass.

LARGE VS. SMALL ENTRANCES.

The Advantages of Large Entrances; Dr. C. C. Miller's Reply to G. M. Doolittle.

Evidently there's sporting blood in the editor's veins. He is spoiling to see Doolittle and me join battle (see p. 166), a battle out of which he may not come entirely unscarred himself, occupying as he does middle ground, where bullets may strike him from both sides. Doolittle doesn't seem to care for any increase of size of entrance, while I want big opening fore and aft, and also at the sides, while the editor stands in the middle, pleading for enlargement only front and rear.

A good many years ago, as I have told more than once, I stood watching Adam Grimm (it makes me just a bit sad to think some of the younger friends don't know who Adam Grimm was) as he was putting surplus boxes (sections were not yet) on his hives. He tilted up the cover at the rear, leaving quite an opening so the air could pass entirely through the brood-chamber, saying to me with much emphasis, "I consider that very important." For years I did the same thing, shoving forward the super containing wide frames, so as to make an opening of ¼ to ½ inch between the two stories at the back. I should have continued it to this day if it had not been that the sections near this opening were too much delayed in being finished. But a notable increase of swarming occurred simultaneously with the closing-up of that ventilating-space, and I have always thought the two things were closely related as cause and effect.

Mr. Doolittle goes back to the time of box hives, and says there was plenty of swarming then, although all hives were raised from the floor-board. But it must be remembered that there might be, and that there generally were, reasons enough for swarming in spite of abundant opening below. And I have some lingering suspicions that colonies were not so wholly given up to swarming in those days as they are in some apiaries to-day. Don't you remember that the goodness or badness of the season was to a considerable extent measured by the amount of swarming? It was a good season if there was much swarming, a bad season if little. If swarming had been as common as now, that distinction could hardly have been made. But every one knows that lack of room is one of the chief causes of swarming. What matter, then, if a hive was raised an inch, and still too little room left? for in many (probably in most) cases, the queen was crowded in spite of the raising. Surplus room in abundance was not given then as now. Even after surplus room began to be given above, it was limited, and only a small passage from the brood-chamber allowed, that passage perhaps not being opened till swarming had been decided upon by the bees.

Mr. Doolittle would just as soon have the bees cluster on the outside of the hive as to have the same cluster hanging idly under the bottom-bars in a space made by blocking up the hive. How about it, though, Bro. Doolittle, if the cluster hanging on the outside of the hive is two or three times as large as could hang under the bottom-bars when the hive is raised? Did you never see a thing of that kind? I think I've seen clusters hanging on the outside three or four times as large as could hang under bottom-bars an inch above the floor.

Suppose, however, that the amount of bees is the same in each case. Take two colonies alike in every respect, in hives exactly alike, eight-framers, for instance. When weather gets hot one of them is raised, so there's an opening an inch high all around. The other is left with an entrance 12 x ⅜ — a little more than three quarts extra room under the raised hive. Now, when it gets hot enough for three quarts of bees to hang outside the hive with the small entrance I don't believe there will be any three quarts under the bottom-bars in the other hive—not hot enough in there.

But suppose the cluster the same in each case, just as many bees under the bottom-bars of one hive as outside in the other, and that the bees extend clear across from bottom-bar to floor. Do you pretend to tell me that it will be just as cool in one hive as in the other? Now look here, Doolittle, I'd stand a good deal from you, but I must draw the line somewhere, and I just *won't* stand that.

In the one case there's an opening 12x⅜. You surely will not say the bees could keep as cool if you should shut up half of that, leaving it 6x⅜. And, by the same token, there ought to be more chance for cooling off if you make another entrance at the back end or at either of the sides of the same size, 12x ⅜; for the fanners at the new entrance could carry on business at their own stand, independently of what was done before. And so, as fast as you give greater room you give chance for more ventilation. Let's compare. In the one case the 12x⅜ entrance forms an opening of 4½ square inches. The hive blocked up an inch has an opening of perhaps 60 square inches, about 13 times as much as the other. Now, I don't say the bees will have 13 times the chance to keep cool they do in the other case, but I do say the chance will be more—a good deal more—a great deal more.

Now, Mr. Editor, if I have understood you correctly you want to keep the sides closed, having an entrance at back and front. That back and front gives you an opening of 24 square inches. Don't you think it will be an improvement to more than double that 24 inches, making it 60, by opening up the sides? Say, Ernest, get down off the fence and stand with me before Doolittle has time to get back at me and show that my arguments are all sophistries.

When it comes to actual practice, I confess it isn't pleasant to have a hive tumbling down off its blocks now and then, neither is it a nice thing to give the bees so fine a chance for attack upon your ankles by having the sides open. But it's very much the lesser of two evils. You can protect your ankles, and I've thought the chance for tumbling down would be greatly lessened if the blocks had nails driven clear through them so the points would stick through, say ¼ inch, one point running into the hive, the other into the bottom-board. Suppose the floor has a pitch of ¾ inch. Then put ½-inch blocks at the back end, and 1¼-inch blocks at front end. That leaves your hive a dead level while your sections are on, but the floor slants all the time.

Marengo, Ill., March 7.

[I have been rather holding back this locking of horns on the part of Doolittle and Miller until such time as we could clear the arena, and here goes the second round.

Joking aside, so far it seems to me that Dr. Miller has the best of the argument. With the ordinary entrance, our bees around Medina, if the colony is strong enough to work in supers, will very often cluster out in front by the peck measureful; and sometimes they will hang over the entrance so thickly that it is impossible to see where the entrance is. This, of course, makes the hive a veritable oven inside, and no wonder about all the bees are out in front as I have found them to be many and many a time when I have opened up the hive to see what the matter was. All this led me to believe that our entrances were too small, and that they ought to be larger. A large entrance can be contracted; but a small one can not be enlarged except by the awkward plan of setting the hive up on four blocks; and if the bottom is fast, why, then we are "up the stump." And now Dr. Miller wants to know if I do not think that 60 inches square of space all around the hive is better than 24 square inches open front and rear. I do not know that I know what I know on this point. Before we adopted the inch-deep entrance we felt that we had struck the medium between the very narrow entrance, ⅜, and the widest; but you need not tell anybody, doctor; but I believe I will raise some of our strong colonies up on four blocks, even if they do have an inch-deep entrance to start on. What care I if they do topple over a little, or if the bees do sting my ankles? I would willingly, any time, take a few stings, if I thought I could save swarming thereby, and at the same time increase the honey crop. —ED.]

THE B. TAYLOR COMB-LEVELER.

The Purpose of Leveling Down Combs; an Historical Resume of the whole Subject.

BY C. THEILMANN.

Dr. Miller, in GLEANINGS for May 1, p. 343, questions the depth to which cells of drawn combs should be leveled down, and says B. Taylor has been quoted as using his excellent Handy leveler for the sake of reducing the depth of the cells. I don't believe he ever used it for that purpose on a perfectly clean section, and have asked for proof. No one has ever brought forward the proof.

The editor also says, on page 344, "I have spent a little time in looking up the late B. Taylor's articles, but I do not anywhere find that he gave a distinct reason *why* he leveled his combs." For some light on this question I will give a little history in the matter, which will clearly show why B. Taylor invented his leveler.

Some years ago the Minnesota Bee-keepers' Association convened at Minneapolis. In one of the sessions the topic of drawn combs to be used for next season came up, and was briskly discussed between myself and B. Taylor. He was against using such combs, and I held them very valuable, and a means of dollars and cents, without any harm or injury to any one, as I had many years' experience with drawn combs before this, and had learned how to manage them so no one could tell the difference between the new and old combs after they were filled. To prove my claim I took some of my dressed and cleaned-out section combs to the next year's convention held at Minneapolis, also to convince Mr. Taylor. When he took one in his hand and held it up to the convention he exclaimed, "It is no wonder that Mr. Theilmann can produce nice honey in drawn combs in the way they are dressed and preserved." I then explained to those present how the drawn combs should be managed after taking from the hives; and after another year Mr. Taylor came to our convention with his comb-leveler and showed it to those present, and had thoroughly repented of the non-use of drawn combs.

Now, the above does not give proof for what purpose the leveler was invented by Mr. Taylor, directly; but my explanation *how* the combs must be dressed leaves no doubt that the leveler was invented for the purpose of melting off the big rim around the cells, which is generally soiled more or less; and, if not taken away, the bees will use part of it for capping the honey, which gives it a yellow tint. This is the whole secret of getting just as nice-looking honey from drawn as from combs built of foundation; no matter how long or short the cells are leveled or shaved off as long as the rims are taken off; and to do that correctly and perfectly I can do it far better with the honey-knife than with the leveler, for I can shave off the rims where the leveler can not reach them without taking too much of the comb, which the bees have to build again unnecessarily.

I shave the combs before extracting, and after that they are put into supers and given the bees for 24 hours to be cleaned, and then stored away for next season's use. I don't believe in bait sections, but use full supers of drawn combs, and thereby get nicer honey. I would think it a big loss in not using drawn combs.

I would say here, that the sooner the supers are taken from the hives after the honey-flow is over, the better and nicer the unfinished sections will work for shaving them, as the comb then is nice and soft, and the knife cuts smoothly, while later on the comb is brittle and hard.

Theilmanton, Minn., May 9.

[We are glad to get this bit of history regarding comb-levelers; but say, friend T., I do not quite get it through my head how you can do a satisfactory job of leveling down combs built out in sections, with an ordinary honey-knife. What I do not understand is how you get that great big awkward blade down into the box so as to make a neat level job.

I think we can assume that the whole purpose of leveling, as was once advocated by the late B. Taylor, was to get rid of the thickened soiled edges of the cells as they are ordinarily left by the bees.—ED.]

PEPPER-TREES; RESERVOIRS FOR HONEY, ETC.

R. Wilkin Straightens us Up a Little.

Mr. Root:—You have a most beautiful picture, on page 347, of the bloom and foliage of the pepper-tree, as described by J. H. Martin; but, what a blunder to write under it, "Blossoms from the eucalyptus (or pepper) tree," as if they were the same tree! It is like describing the picture of the white oak (or peach) tree. And then A. I. R. has to back it up in his footnote as a real picture of the eucalyptus, while the eucalyptus is noted for its exceeding stature. An old pepper-tree is usually twice as wide as it is high; otherwise the descriptions are good.

In a late issue of GLEANINGS you name my concrete storehouse as a "reservoir for honey," and the article so naming it is going the rounds of the papers. It may be called a reservoir, but it is simply a room 15x26, 9 feet high, made of grout, or concrete, of lime, sand, gravel, and stone, with an iron roof and hydraulic-cement floor, containing a window in each end and a door in the side. A cistern or even a tank above ground can doubtless be made of hydraulic cement that will hold honey. I have a fish-pond mainly above ground that holds water to perfection. Such a cistern would certainly be everlasting, but not portable. By the way, why do we not have more concrete buildings? The cost of material is small; the walls, 10 inches thick, of my storehouse, had only 8 barrels of lime; the rest of the material I had for the picking up. In many places, especially in California, a cellar could be dug and the walls made of the material dug out. Common inexpensive labor does the work. Some lumber is needed to hold the boxing for mortar, and to support the roof. My house cost me about $50 for material and $50 for work, at $1.50 per day. I have a good two-story eight-room dwelling-house of the same material. I do not know why our California bee-keepers are not using their unoccupied time in making themselves good fire-proof houses. My own, J. F. McIntyre's, and L. E. Mercer's are all I know of in this region. Fowler & Wells, of New York, forty-five years ago published a 50-cent book called "Home for All," that gives details of such buildings, besides giving many valuable hints on economy in building.

Newhall, Cal., May 12.

[Friend Wilkin, I humbly beg pardon, and own up. Ernest brought me the article and the picture, and in reading it hurriedly I got it into my head that friend Martin meant in his closing paragraph to say that eucalyptus and the pepper-tree are one and the same thing; and as I remembered both trees quite well, I concluded they must be only different names for the same thing, like basswood and linden; and I remembered, also, that eucalyptus has two distinct kinds of leaves. I am sure you will not say I am wrong in this respect. I supposed the beautiful picture showed only one form of the leaves and flowers. I think I shall have to visit California a little oftener, and then I shall not get quite so far off when I am trying to "teach" people.

In regard to the reservoir business, Ernest will have to shoulder that part of it. I have always admired such buildings as you have described, and I suppose the principal reason why they are not used more here in the East is because lumber is cheap, and a wooden building can be so quickly put up and made ready for occupancy. I remember the little book you mention; and if it is still in print I should be glad to see a copy. Thanks for calling our attention to the matter.—A. I. R.]

RAISING HIVES OFF FROM THE BOTTOM-BOARD.

Robbing; Business Lies; Hauling Bees, and What to Do when the Bees Escape from the Hives; the Philosophy of the Hot-water Treatment.

BY E. S. ARWINE.

Editor Gleanings:—I must beg leave to differ with you and Dr. Miller as to raising a hive after a sudden stoppage of the honey-flow, etc. From my experience (and I have handled bees for more than a third of a century) you have overlooked the cause impelling bees to rob. I should not hesitate (if the circumstances demanded it) to raise a hive an inch or two, even when there was not a mite of honey coming in, provided it was done as follows:

Lift the hive gently, slowly, and straight upward, so as not to excite the bees nor cause any unsealed honey to leak from the cells. If the hive be sealed down tightly it should be broken loose from the bottom-board 24 hours before being raised (that is, when no honey is coming in). It is the odor of broken honey, pollen, or propolis, or the odor of excited bees, especially if filling themselves with honey, that attracts the wily robber. Neither should I fear to move a hive provided I did not move it far enough to bewilder the returning bees, and thereby cause them to try to enter the wrong hive and so excite fighting, which in turn might lead to robbing by creating an unusual odor, which would start the bees to searching for the source of the fragrance; and if a colony were much disturbed, and a robber or two once gained admittance, and escaped with his load, then indeed would you have fun, but not the kind to provoke laughter.

If honey is not coming in freely when you read this, please go out to the apiary and prove my statement to be either right or wrong, and henceforth do not take a "think-so" when you can so easily obtain a "know-so."

It is not often I find cause to differ with friend Doolittle; but I must do so in regard to the facing problem. God bless Bro. Doolittle. He is laboring under a mistaken charity. But we should "shun the very appearance of evil," or acts which others can so easily construe as evil intentions.

From the tone of GLEANINGS I am confident The A. I. Root Co. and many of your correspondents do not realize the readiness with which a large proportion of business men will tell uncalled-for lies. If you desire to obtain a definite knowledge of this, you just go into stores where you are unknown, and price various articles; and when you come to an article which is sold for a large profit, just remark, "That is pretty high; can't you sell it a little cheaper?" and note just how many will lie about the cost of the article. Of course, you must price an article of which you know the wholesale price. You may even find some professing Christians who will tell falsehoods, and, if caught, will justify themselves by saying everybody else does it, or it is business, or a trick of the trade. Try this, and let us know through GLEANINGS what your experience is. Verily, "evil men and seducers shall wax worse and worse."

In regard to hauling bees, unless you upset a hive or jostle slowly over a rough road, there is very little danger of stinging unless the bees have a large place of exit—that is, where several can get out at once. After you have hauled them two or three miles they cease to be angry; and if then they should find a place where only one bee can get out at a time, and you have no cover on your wagon, the bee will circle around the hive, and may remain some little time with the wagon; but eventually it flies away and is lost; but if your wagon is covered so the hives are in a darkish place the escaping bees will nearly all cluster on the hive, and remain for quite a while. I have hauled bees with a pint or more on the outside of the hive, and I have never had any stinging after getting started a little way unless I stopped and disturbed the bees. Therefore, if you are hauling bees, and many of them begin to escape, keep your team going at a lively gait, even in a trot, unless the road is very rough. In that case, stop, unhitch, and drive your team away very quickly; but I have never had to do this.

Your hot-water treatment is all right, I suppose. I never have tried it on bee-stings, although I once had a great many stings in my head and face—I should judge more than a hundred at one time. Let me correct your therapeutics a little. Although hot water acts momentarily as a stimulant, its curative effects are not those of stimulation. It combines in itself the action of a sedative, astringent, and anodyne — that is, it contracts the capillary vessels, blunts the sensibility of the nerve, and reduces the excessive activity of the parts to which it is applied. Hot-water fomentations are indicated as remedies in local congestions and inflammations, and when desirable to induce suppuration; but poultices are better in the latter case. Congestion and inflammation are the result of some cause which induces excessive stimulation in the parts attacked, and a therapeutical agent is indicated which will act generally or locally (as the case may require) as a sedative and anodyne. Stimulants are indicated only where the action of the system or an organ is too feeble to perform its normal functions, and then only to tide over the crisis. Sometimes stimulation acts beneficially when applied locally to a part at some distance from the seat of disease, in which case a revulsive effect is sought.

Both farm and honey crops are a failure here.

Dove, Cal., May 11.

[I do not know that I know, friend A., to what you are referring in your first paragraph. You say you differ with Dr. Miller and me about raising a hive after a sudden stoppage of the honey-flow. I assume that you mean *off* from the bottom-board; but as I read over the next paragraph or two I am more mystified, because I agree with about all you say. I do not quite like your fling, where you give us the advice not to take a "think-so" but a "know-so." I like it less because I don't know what you are talking about.

With regard to hauling bees, your experience is quite in line with my own. If a single bee escapes before the bees have been hauled any distance, it is liable to make trouble. But several times on the road I have had the bees get out all over the hives. But they were so disconcerted by the jolting that the fight seemed to have been all taken out of them, and their sole desire seemed to be to keep close to their own entrance. The condition is somewhat the same in the case of taking a bee-tree. The moment it is chopped down, the bees are ready to attack every thing in sight; but after the log has been hammered by repeated blows of the ax to open up the cavity they are so disconcerted that they are as peaceable as flies. Continuous jarring will make a colony reasonably peaceable.

I am glad my hot-water treatment is all right, even if my therapeutics is not.—ED.]

SWEET CLOVER.

BY PROF. A. J. COOK

Dear Ernest:—I gave, as the result of my own experience, the opinion that sweet clover, while a very excellent honey-plant, was of little worth for hay or pasturage. I am glad if it is found valuable for stock, and rejoice that so many find it eaten with a relish by horses and cattle. That it has great value for green manuring, and, like all leguminous plants, will draw largely from the atmospheric nitrogen, and combine this in available form to supply the most expensive of our fertilizer elements, there can be no question. There is no quicker method to restore lost fertility than to plow under a rich vigorous clover crop, and surely melilot is just that. The yellow species of sweet clover grow abundantly about here. It is vigorous, and is an annual. I do not think it attracts the bees so greatly as does the white, and I notice that it is not eaten readily by stock—at least by some stock. I am very glad that so many report *Melilotus alba*, or the white sweet clover, as furnishing appetizing food for cattle and horses.

In last GLEANINGS you speak of our beautiful graceful pepper as though it and the eucalyptus were one. They are very different. The pepper is difuse, or spreading the foliage —delicate; and the whole habit of the tree is wonderfully graceful. The eucalyptus is tall, the foliage coarser, the leaves simple, and the blossoms much larger. The pepper is from South America, the eucalyptus from Australia. I have some eucalyptus honey, which I think is pretty nearly unmixed. It is very nice, and has no flavor that would suggest its origin; in fact, the flavor is exceedingly pleasant. I think it is rare that any peculiarity of sap is met in the nectar or honey. Pepper is said to be an exception; yet I am doubtful whether this is true. I should like to see or taste of pepper honey that showed the peppery taste. I can believe that this might come in the pollen which was conveyed in the honey, as the bloom seems as peculiar in its pungent qualities as is the foliage.

The eucalyptus is peculiar in its rapid growth, great number of species—nearly 200—and its ability to resist severe drought. The numerous species bloom at various seasons, so that, in a large park of varied species, the bloom may be found in every month of the year. Some of the flowers are of a rich red color, and very showy, while all are beautiful and attractive. In December and January the red gums may be seen swarming with bees as the large white blossoms are flung out to the breeze and to the bees.

Claremont, Cal.

[As to the eucalyptus, see answer to Mr. R. Wilkin, in this issue. I am glad to know that you do not hold to your former opinion. I was sure you would change your views upon the presentation of reasonably good evidence. —ED.]

RAMBLE NO. 146.

The Lot of a Tenderfoot; Prospects for the Coming Season very Poor.

BY RAMBLER.

To Southern California there has been given a light rainfall this year; and short crops, empty pocketbooks, and a light grub-stake will be the rule with a large class of people who live upon dry ranches. The entire grain crop on such ranches will be a failure; our sugar-beet industry will be crippled to the extent of several hundred thousand dollars; even the irrigated districts will not escape some shortage in crops, for the rainfall has not been sufficient to fill the mountain springs and reservoirs. The bee-keeper south of the Tehachapi range of mountains will feel this condition of things as keenly as any class.

There are not a few who make the honey business their chief or only source of income. Here in this cosy nook in the foot-hills is a little cabin, a little wife and a little child or two. The man at the head of it has pardonable pride if he desires to make an earthly paradise for himself and loved ones; the roughness of the little cabin is hidden under the drooping branches of a pepper-tree, and the climbing rose and sweet-scented flowers surround the home. Five or ten acres are set to fruit-trees; and, though he came to California with a few hundred dollars, he has spent it all, and, ten chances to one, he is quite a little in debt. Not much revenue will be derived from the fruit-trees for at least five years, and something must be done to tide the little family over until the place becomes a paying investment. Our rancher had some knowledge of bees when he lived away back east, and now far back in the canyon he starts an apiary.

With a succession of fair honey-yields there is no business that can be taken up and increased with such light expense, and so quickly, as bee-keeping; and even when the honey is sold at a low price the apiary becomes the main support of the family. Under such circumstances it is easy to imagine how a total failure of the honey crop will bring anxiety into the little family circle.

B. S. K. BENNETT'S APIARY, IN LOS ANGELES, CAL.

There is another class of bee-keepers, mostly unmarried men, otherwise known as bachelors, who own no fruit-ranch, no land, no rib, no kid; they live on canned goods and flapjacks for half the year, and "blow in" a good share of their earnings during the next six months. I now have in mind one of this class who received a good amount of cash for his honey crop, came to town, flashed out in fine clothes, dined and wined expensively, cultivated musical tastes on the piano, and also trained his light fantastic toe in a dancing-school. With expenses in other light accomplishments it is needless to say that, after a year's total failure of the honey crop, he is glad to get back to his cabin and his bees with the little he has left.

The Rambler does not belong to either of the above classes. He has an apiary but no fruit; he also has the fantastic toe, but it performs its fantasies in climbing mountains, crossing valleys, and descending into rugged canyons; here there is no use for a piano, for there is music in the waterfall, in the song of the mocking-bird, in the howl of the coyote; even the gentle evening breeze that lulls you to sleep has its place in nature's symphony.

> To sit on rocks, to muse over flood and fell,
> To slowly trace the forests' shady scene,
> Where things that own not man's dominion dwell,
> And mortal foot hath ne'er or rarely been;
> To climb the trackless mountain all unseen,
> With the wild flock that never needs a fold,

Alone o'er steeps and foaming falls to lean,
This is not solitude; 'tis but to hold
Converse with nature's charms, and view her stores
unrolled.

Therefore if there is any apology to offer for rambling again it must be attributed to a dry season and a desire to find pastures even in California, where the nectar of flowers invites the bee to gather it, and where the bee-keeper can have the pleasure of subgathering.

Before setting out upon this ramble, for which I have purchased a thousand-mile right of way, I wish to write a few words about Los Angeles, and ramble with a few of the bee-keepers in its vicinity.

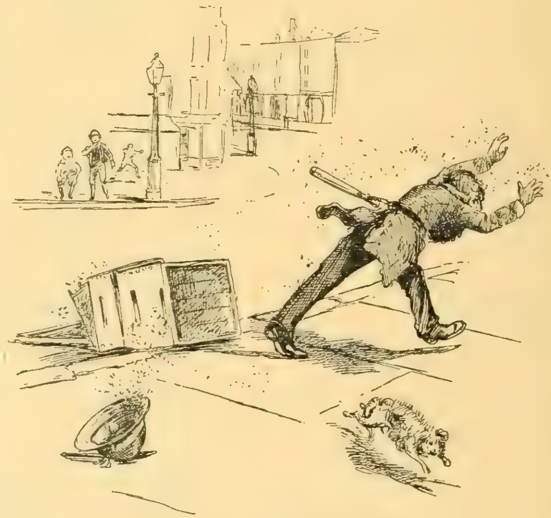
Ciudad de la Reina de Los Angeles, as the Spanish have it, and the City of the Queen of the Angels, as the Americans have it, or, for short, Los Angeles; the Americans have not time to utter long names; and this name, like many others in this State, has been materially shortened.

This city was founded under the rule of the Spanish padres about one hundred years ago, and had a sort of lethargic existence with a population of a few hundred Spaniards, Mexicans, and Indians, all living in adobe houses. From all accounts it was a very sleepy town; but one morning in 1847 it was shaken out of its ease and dreams by our Col. Fremont and his rangers; and since that event it has never relapsed into its former condition; and now the City of the Angels is the most wide-awake community on the continent. Up to 1888 the population had increased to about 50,000; but in the last ten years the city has made an unprecedented leap ahead, and now numbers a little over 100,000; and from the energy with which the hammer, the saw, and the trowel are being wielded, there will be another doubling in the next ten years.

The mild climate has attracted many wealthy people, and their cash and taste have created here most beautiful homes. The climate adds its influence to the adornment; for where roses climb and bloom all the year, and a majority of the trees are evergreen, there is no stretch of the imagination for us to say that we are favored with perpetual summer. While wealth in a private way adds to the beauty of the city, means are not stinted when called upon for any public enterprise. In the winter of 1897, when the worthy poor were unable to secure work, and the gaunt figure of want sat at their doors, over $20,000 was raised by private subscription, and these people were set to work in the public parks, and the benevolent enterprise will redound to the credit and beauty of the city and to the donors for ever.

For adornment the eucalyptus and the pepper tree are largely planted. If massed in one tract the result would be something of a forest. When these trees are in bloom, which is several times during the year, the bees work upon them industriously. The honey-bee, however, is an ostracized individual in this city; the city fathers have passed an ordinance prohibiting the keeping of bees within the city limits; but in spite of ordinances the bees of their own accord have taken possession of many vacant spaces in residences, and there may be a hundred or more such colonies within the city limits. In some instances unused chimneys are occupied by bees. In one such instance the bees became so prosperous that they filled the chimney and gnawed through the paper that covered the stovepipe hole, and commenced operations in the good people's spare room. The mistress of the house had an idea they would fill the house with honey if they were let alone; but when they withdrew she thought the bees had given up the job in despair (they had evidently swarmed).

There are some thirty bee-keepers in the city; but their apiaries are located all the way from ten to a hundred miles from their homes; a few small apiaries are located in the suburbs of the city, and one almost in the business center where the acreage is limited. As will be seen by the photo, the apiary is used in queen-rearing, and the bees are of a peaceable strain, as the presence of the child will show. Not wishing to have the police get after the owner I forbear to give the name and the location.



THE MEDDLESOME POLICEMAN.

The city ordinance has never been applied to force bees from the city, for the bee-keepers comply with the ordinance except in a few instances like the foregoing. The only attack that has come to my notice was by a brave policeman who, wishing to make the bees comply with city regulations, kicked the hive over, to the delectation of the small boys who were quite numerous in the vicinity. There was a counter-attack that made the policeman think there was something hot in the vicinity, and it was several days before he could see clearly to walk his beat.

The City of the Angels is a center of distri-

BOX
HIVE
FACTORY
THE ORIGINAL

UNION HIVE AND BOX CO'S PLANT AT LOS ANGELES, CAL.

bution for all Southern California; and the pioneer firm for handling bee-keepers' supplies to any extent was G. G. Wickson & Co., who were the first to handle the A. I. Root supplies. The pioneer local manufacturers of supplies exclusively is the Bennett Bee-hive Co., who also publish the *Pacific Bee Journal.*

The Union Hive and Box Co. have a large trade in various kinds of boxes, and are also successfully manufacturing hives. Their motis "Good work or no pay." This year they handle the A. I. Root supplies, and are the only firm that has a stock of eastern supplies on hand. I present a photo of their factory. Our coast manufactories are not very extensive, but there is plenty of time and a chance for them to grow; and it is a good plan to have several manufactories, for then competition comes in and the bee-keeper gets his supplies at a cheaper rate.

Latest dispatch.—I think the police will not get after that city bee-keeper if I give his name. It is Mr. Bennett, the manufacturer of supplies, and the editor of the *Pacific Bee Journal.* Mr. Bennett is a member of the National Guards, and at the present writing there is a prospect that he may be called to the patriotic duty of guarding the Philippine Islands. All honor to the brave boys in blue!

* * *

TANGLED.

A Correspondent who would Like to be Unraveled.

BY J. J. M'COY.

I have been a constant reader of GLEANINGS for many years, and I have carefully followed such advice as is given by those I considered most competent to advise. Up to the present time, Doolittle, Hutchinson, Dr. Miller, and a host of others of more or less note, have all been given due consideration. But now I am completely tangled, all mixed through, and what will be the outcome is more than I can tell. I can't see any shadow of coming events, or, at least, if I do they are mixed with a general conglomeration of rubbish, broken separators, old-style sections, thick top-bars, hives with entrances sufficient for rats to creep through, and a great many other things, while in the background float the spirits of Huber, Langstroth, and Quinby, smiling. Why, I can't tell; and the more I study about matters the greater the confusion. For relief I turn to my favorite authorities, and find but little to comfort me. Have they all gone daft? Is all this true that they teach? Do Dr. Miller, W. B. Ranson, and their followers, know that "T supers" are better than all other surplus arrangements? Does The A. I. Root Co. know that the section-holder is superior to all other "fixin's" for surplus apartments? Does Doolittle know that his single-tier wide frame is superior to all other methods for securing his XXX facers? Don't they think so at least? and don't they think so awful strong? Of course, they do; and I, just like them, think that Ranson, Doolittle, Miller, and all the A. I. Root tribe and all their followers couldn't run after me fast enough to induce me to use any of them as a gift in preference to my present arrangement. But this is only a small matter as compared with the "New Idea" fences (not picket, but plank), plain no-bee-way-non-peep-hole earless sections (how does that name strike you?).

I guess Dr. Miller will roll *his* sleeves up now, and, with Doolittle, make a raid on me. Well, let 'em come. I have a friend who can hold Doolittle level, and I'll keep the flies from tickling the doctor's nose a little while (if I can); and as for the rest of my opposers I guess they won't bother till they get their new "post and rail" fence completed, seeing that spring work is here with the "Ides of March," and so many things to do. I guess they won't bother for awhile, at least.

Say, Doolittle, I wouldn't tell people that it is honest to fill the center of cases with buckwheat honey and XXX facers next the glass, for fear they might not read the rest of the conditions, but just take it for granted to be "*a la* Doolittle," and go and do it, to their sorrow, and then something will get you, sure. And now comes the editor, and says the front of the case will be apt to have the *best* honey out for display, and not for the purpose of deception. Now, who said buckwheat honey wasn't good? Something will get you too. Better "look a little out;" may be you'd better take that back, and "say 'em to-night," and then "say 'em to-morrow night," and "say 'em all the time."

But I have wandered away from the starting-point. Will some one tell me where I am? Oh, yes! what is one to do about reversible bottom-boards when all the hive-bottoms are "spiked" fast? Must he "kick" them off as Coggshall does his supers, and then feel for the bottom corner of his breeches pockets? Then the perfectly level hive, the tipped-to-front hive, the large-front and rear-entrance hive, the deep or shallow hive, the ten-frame, the eight-frame, the single-walled, the double-wall, the Bristol, the Danzy, the Heddon, etc.! Then the separators, wedges, springs, thumbscrews, slats, honey-board, drone-traps, queen-cages, cell-protectors, and what not—oh, dear me! I am completely "bomfoozled." I wish some kind friend would unwind me. But, say; do it gently; don't twist my neck, please. I was born that way; don't kick me "*a la* Coggshall." I might attempt to kick back. Don't take me to the chopping-block as Rambler's man did "Susan B." I haven't "usurped prerogatives," but let me down "aisy loike." I feel better now, for I just "thot" of my last season's crop of honey, 6000 pounds from 60 colonies of bees, spring count. "How's that for high?" Do any of you want to know how I did it?

Mt. Erie, Ill.

[Yes, and while you are about it "sail into us some more," and don't forget to give some of the other chaps a jab. Misery loves company, you know.—ED.]

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE

FORMING NUCLEI.

Question.—In making nuclei I have always been troubled by so many bees going back to the parent hive that the prospective nuclei were nearly worthless. Then I wish to introduce virgin queens to the nuclei formed, and in this I am not very successful. A friend tells me that you have a plan for making nuclei and introducing virgin queens at the same time, which you gave in the bee-papers some time ago. Will you please tell the younger readers of GLEANINGS about it, and how it works with you after years of trial?

Answer.—As it has been some years since I have said any thing regarding the matter of forming nuclei, it may be excusable with the older members of the fraternity if I say a few words on this subject for those who have been added to the ranks of apiculture in recent years, especially as the plan has always proved successful.

The first requisite to the plan I use is a box made as follows: Get out two pieces of lumber, eight inches long by seven wide by ¾ or ⅞ thick; also two pieces 14 inches long by 7 wide by ¼ thick. The latter are nailed to the former so as to form a box about 12 by 7, inside measure, without sides. For sides I use two pieces of wire cloth, cut 14 inches long by 8½ wide. One of these is nailed on permanently, while the other is left so as to be easily removable, by nailing the wire cloth to a little frame like a slate-frame, which frame is lightly tacked to the box, or hinged, according to the wishes of the operator. In the top of the box is bored a large hole, into which a funnel is to be inserted. This funnel is to be large enough to allow one of the brood-frames from your hive being shaken inside of it, and the hole in the small end should be 2½ to 3 inches, so that the bees will readily roll or pass down through it and not clog. This funnel is very similar to those used five or ten years ago in putting up bees, when so many were sold by the pound. The hole in the box should also have something to close it, like a large button, made from your ¼-inch stuff, or a tin slide.

Having funnel and box ready, go to any hive that can spare from it from a pint to two quarts of bees, according to the size of the nuclei desired; take out a frame or frames having bees on the combs, and place on the outside of the hive. If at a time of honey-dearth, so that robber bees may be troublesome, hang the frame in an empty hive, and throw some old bag or blanket over, thus running no risk of creating a row in the apiary, or having your nuclei robbed out after made. Give the frames several sharp knocks with your thumbnail or a little stick, to cause the bees to fill themselves with honey, and, when so filled, shake as many bees down through the funnel into the box as you wish in your nucleus. Take out the funnel and close the hole, when you will put the frames from which you shook the bees back into the hives, and close them.

In all such operations especial care must be used not to take the old queen with the bees thus taken; for if you do the colony will be greatly injured, and the virgin queen you attempt to introduce will be destroyed. To be sure you do not get the queen, it is always well to see her, and then set the frame she is on out of the hive till you have taken all the bees you wish at that time.

Having the bees in the box, take the same to any room or shady place, or to the cellar, and throw a blanket, old coat, or piece of carpet over it, to darken it, where it is to be left for four to six hours. In an hour the bees will begin to realize their queenless condition, and tell of it by breaking the cluster they had formed, and running frantically about the cage; and, as time goes on, this distress will be more manifest till they will fairly beg for something in the shape of a queen; and the longer they are kept without one the more sure you will be of their accepting the one you give them.

When the time has arrived that I think it proper to give the queen, which in no case should be in less than four hours from the time they were shaken into the cage, I go to the queen-nursery and get a virgin queen and give them. To put the queen in, set the box down suddenly, so that all of the bees will fall to the bottom, when the hole is opened in the box and the queen allowed to run in with the bees. The bees will at once set up a most joyful hum, thus telling of their new-found treasure as plainly as if they could talk.

The box is now left as it was before the queen was put in, for from five to twelve hours, just in accord with the time the bees were put in. If put in during the early forenoon, then they are taken out near sunset; if during the afternoon, then not till the next morning. When ready to take from the box, a hive is prepared by placing in it a division-board, a frame containing a little brood, and one having two or three pounds of honey, all of which are put on the opposite side of the hive from where you wish the bees.

Now get the box, in which you will find the bees all compactly clustered like a swarm, and carefully remove the wire-cloth movable side, when, with a quick jerk, the bees can be dislodged from the box to the bottom of the hive. Now quickly draw the comb of honey, brood, and division-board across the rabbets of the hive, in the order named, to where the bees are, and they will be immediately on them. The hive is now closed, the entrance opened on the side farthest from the combs; and if all has been rightly conducted, and works as it should, in a week you will have a nice little colony with a laying queen, from which a full colony can be built up, or queens reared for market.

If you do not wish to make the box and funnel, the bees can be shaken into a tight hive, some wire cloth fastened to the top, the queen run in through a hole in the side, or under one corner of the wire cloth, and the hive left bottom up after the queen is put in, so that the bees will cluster on the bottom. In hiving, turn the hive right side up, remove the wire cloth, set in the combs and division-board, doing all so quickly that the bees will not have time to crawl up the sides before you get the combs in. Now close the hive at the top and open the entrance, when you have the same thing as before, though the box plan makes one much more independent of the whims of the bees; and where many nuclei are to be formed, it amply pays for all cost in construction.

HEADS OF GRAIN FROM DIFFERENT FIELDS

SCRAPING SECTIONS; SECTION-HOLDERS; A REPLY TO DR. MILLER

Look here, Dr. Miller, I do not wish to intimate that you are not truthful, but I do believe that in our locality you can not scrape half of 1200 sections per day. You surely can not have the amount of propolis that we have. Did you notice what James Roat says on page 299? He says that they considered 100 sections a good day's work, scraping with the knife. In localities where there is little propolis, a section per minute could be easily cleaned with the machine cleaner. Now, in order to clean 1200 sections per day of 10 hours you will have to scrape two sections per minute. If you look at it in this way you will notice that very little time can be given to each section. You say that you wish I would figure a little when I get through cleaning, if I had as many to scrape as yourself.

I have repeatedly figured the cost of scraping, and I should like to ask you what I shall do about it when I am not able to scrape more than I have stated, and do it right. Shall I let the sections go unscraped because I can not do it as fast as you can?

Again, you throw a straw at me in GLEANINGS for April 15. I am not very smart, doctor, but straws do not fly very swift either. As long as you do not throw clubs I will be contented.

You seem to think that three men would have to be pretty smart to examine 200 colonies before breakfast. Well, let us figure a little. Three men get up in the morning at 4 o'clock, and have breakfast at 7. This would be 9 hours for one man. Nine hours to examine 200 colonies is 2 minutes 42 seconds for each one. Well, I would rather do this than scrape 1200 sections per day. I believe I will tilt that Hill up a little higher. I can not see any reason for laying him low in some hollow.

If 200 colonies are in the condition that they ought to be, it takes very little time to see that all is well. If they had an abundance of stores in the fall they will not need to be examined in regard to this point; and as the brood-nest would not have to be contracted except with a small percentage of the whole, I think I should have quite an easy nine hours' work; at least this is how I see it in my locality.

SECTION-HOLDERS VS. T SUPERS.

Doctor, you ask me to tell you why you should use the section-holders. Well, I will tell you. It is simply because they are superior; but my feeling toward you in regard to section-holders is like the little boy's in the following story:

Two neighbors were living peaceably side by side. We will designate them by neighbors A and B. Neighbor A had a boy who had some words with neighbor B, and the boy politely told neighbor B to go to the infernal regions. Now, neighbor B told neighbor A what his boy had said. Neighbor A gave his son an option of either going to neighbor B and apologizing or taking a whipping. So, over the boy goes to neighbor B, and, says he, "I told you yesterday that you should go to hades, and I came back to-day to tell you that you need not go unless you want to."

I. S. TILT.

SHEEP AS LAWN-MOWERS AROUND HIVES.

We have 80 colonies of bees in a yard of about 60 square rods. Hearing of others' success with sheep to keep grass down we gave them a trial last season, and with most gratifying results. It may be well to mention the fact that sheep consider grapevines as grass, whether in, over, or just outside the yard. We put two 80-lb. lambs in, and they made a good living till after harvest. This season we will follow a better plan of putting in more sheep, and just when needed. The sheep like especially the grass at the entrance. At times the bees will make them move on, but I have not seen any become tangled in their wool, nor enraged at them, as they are at other animals, which I can not account for. Last season I chased a groundhog through the bee-yard. It stopped one moment between two populous colonies standing one foot apart. There was a rush of angry bees, and, after my killing Mr. Groundhog, several rods from this place I found him still well sprinkled with buzzing, angry bees. F. S. COMSTOCK.

North Manchester, Ind., May 16.

HONEY FOR COOKING; DUCKS AND BEES.

Mr. Root:—I saw your request for those who have used honey for cooking, in your excellent paper, where I learn many things. I would say that, for 20 years, since keeping bees, I have used honey a great deal for canning fruit, and especially black raspberries for pies. I think it better than sugar. For apple pies and for cake we use part honey. When pie is eaten warm there is more of a honey taste than when cold. I do not have buckwheat honey. That might not be as good for cooking. Corn bread is nicer sweetened with honey.

Yes, ducks and bees go together good. Quite young ducks will look for the wax-miller till quite dark, and early in the morning. I find them a help to keep these insects from among my bees. They do not mind cool weather like chickens, and are easily raised with little experience, and do well without much water, if only plenty to drink.

We are much interested in F. Greiner's piece on pollen substitutes, and in every help to sell section honey to responsible buyers.

I hope you will print your way of grading before time for grading this year's crop, so many of us can refer to it, and have it as perfect as possible. CYNTHIA E. TAYNE.

Tuttles, N. Y., May 2.

[The plain section and fence may or may not set up a new standard for grading. We shall see as the season goes on. At present perhaps we had better wait.—ED.]

YOUNG DUCKS NOT KILLED BY BEES.

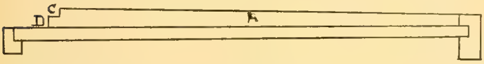
I notice in GLEANINGS of May 1, page 352, J. E. Hand says that his ducks die with their throats full of bee-stings. I can't understand that statement. I have a hundred stands of bees, and I raise ducks by the hundreds year after year. I have seen the young ducks stung by swallowing a bee, but never had one die from the effects of it. They never care to catch a second bee. Last year I lost lots of half-grown ducks with swelled heads and throats, but it was not caused by bee-stings. I think it is a disease caused by the hot sun, and not having proper shade. I should like to know what kind of ducks he has, that catch bees till they die from the effects.

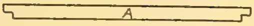
Braceville, Ill., May 16. JOHN BURR.

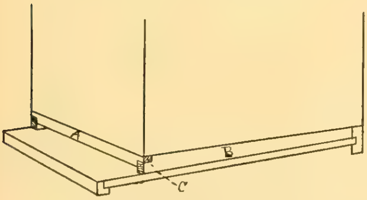
[This confirms my statement to the effect that there is no trouble in raising ducks and bees together, J. E. Hand notwithstanding. This leads me to believe that friend H. must have awful cross bees.—ED.]

HOWES' BOTTOM-BOARD.

This is a side view of my bottom-board. It is the same as your beveled bottom-board,



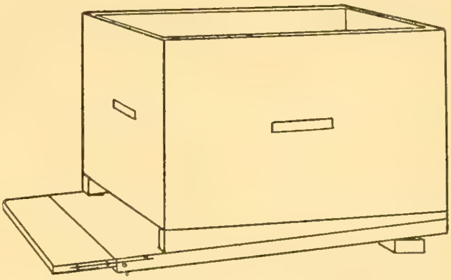




with two exceptions; and those exceptions are what *make* the board for me. First, the rear cleat is ½ inch deeper below the bottom-board than the front; this gives the board a ½-inch fall from rear to front, when set on a level (which all hives should be), and does away with rain driving in and remaining to evaporate and make the hive damp; also facilitates the removal of dead bees, etc., by the living. Second, the side strips are scant ½ inch thicker at the front end, which allows of the hives being set perfectly level both ways, and gives them ⅞-inch entrance, so necessary during the honey-flow. For contracting the entrance I use a ½-inch square strip like pattern above, which just slips into the notch under the front end of the hive, and contract the entrance to ⅜ inch. E. W. HOWES.

Chatham, N. Y.

[There is no doubt that this would give freer ventilation; but whether it would be as good as one having a deep space of the same depth clear to the back end of the hive, is a little doubtful. It is true, however, that it allows the hive to be perfectly level while the bottom-board itself may slant sufficiently to shed water.



Here is another idea almost in the same line, sent us by another friend whose letter I have mislaid. The principle is the same save that in the one first shown strip A is used to contract the entrance. If the colonies are as strong as they should be I doubt if the full entrance need be contracted, even after the honey season. In winter or during cold weather it may be necessary, however, to use some sort of contracting-strip.—ED.]

THAT STING-PROOF BEE-SUIT.

GLEANINGS, April 1, page 253, gives a sample of a bee-proof sting-proof suit. This dress is very good, but it is the right thing to take a warm bath in a few seconds. As represented, it is the first one I used when I was a novice. At times I have to replace the upper part of the cloth by a piece of wire cloth sewed all around a straw hat, and shaped in such a way as to outline the shoulders. With such a device, the air coming from all sides makes a great difference in one's comfort.

FRANCOIS BENOIT.

Montreal, Que., Can., May 2.

THE BELT VS. OTHER FORMS OF SECTION-CLEANERS.

Having just read L. A. Aspinwall's article, *Review*, p. 107, I am perfectly astonished when he says on page 109, there is one inherent objection to the belt-cleaner when the fine particles of propolis are thrown into the honey when the edges of the section are cleaned. Now, that is a mistake, and I want you to test that the very first thing. The section is held when cleaning the edges across the belt like this: Hold one edge at a time lengthwise, but a little crosswise, the belt revolving from you, and I defy any one to discover with a spyglass one particle of propolis or dust on or in the honey; besides, I want you to clean 100 or 500, or get some one to do it, and see if the belt is gummed. It's a mistake, also. Mr. W. or Hutchinson didn't ask Mr. A. how many combs were cracked out of that thousand. There's a screw loose somewhere, and I want you to find it. Why, bless your soul, I've got the wheel yet that cleaned about 1000 sections, and it isn't past doing a pretty good job yet. I don't believe Aspinwall ever tried a belt machine, and his talk is theory.

Reinersville, O. J. A. Golden.

CONTRACTION NOT A THING OF THE PAST.

Mr. E. R. Root:—On page 358 of Gleanings you speak of "the contraction fad." You seem to think that it has passed away. Well, not much. I have been practicing it *a la* Heddon and Hutchinson for the past eight or ten years, and intend to keep right on until I find something better. I use ten-frame portico hives; spread the brood until every frame is full; use the Alley trap, and, when they swarm, contract the brood-nest to five L. frames. I have never had an after-swarm, and none of them have swarmed the second time—i. e., none of them ever get strong enough to swarm again that season; and last, but not least, I get from 25 to 50 per cent more comb honey than I ever did by any other plan. With me "the contraction fad" has come to stay. I also use the T super, and shall continue to use it, and Niver may play the banjo and smash 'em if he wants to. I have 12 T supers filled with plain sections and fences. I like to keep up with the procession, but not by holding on to somebody's coat-tail. I once heard of a man who lived on a farm for forty years before he found out that hogs would eat turnips—probably never would if the hogs had not given him an object-lesson by getting out of the pen into the turnip-patch. W. E. Flower.

Ashbourne, Pa., May 7.

[No doubt, friend F., for your locality and for your method of work contraction is all right; but I verily believe that, in the hands of the inexperienced, it has done more harm than good; and I also believe that many of the experts who formerly used it have gone back on it.

That is right—be independent. Don't hang on to anybody's coat-tail providing you can paddle your own canoe.—Ed.]

A SECTION-CLEANING BELT; A GOOD SUGGESTION.

Please allow me to suggest the use of a leather belt filled with fine wire (resembling a brush) for a section-cleaning machine, such as is used in woolen-mills, or the kind the belt-makers use in raising a nap on the lap before applying the cement. I believe that would work if the wire were short and run at a fair speed; and when such a belt goes over the pulley the wire would open up or spread apart, and let all refuse fly from it.

Morris, Ill. W. E. Dages.

BERMUDA GRASS, ETC.

I see on page 464 Mr. O. O. Poppleton says Bermuda grass is very hard to destroy. In this country it is easily killed if plowed up broadcast in very dry hot weather or in winter, so the roots can freeze.

It is a splendid pasture grass. Stock and cattle will get almost as fat on it as they will on grain. But plowing it in the spring will only cause it to grow more vigorously.

Chambers, Ala., May 9. J. M. Cutts.

BEGINNERS' QUESTION BOX

BY E. R. ROOT

J. W. W., Ky.—If you have a lot of spoiled molasses it may help you some to heat it—especially if it is soured. If the bees will take it they will make good use of it for brood-rearing; otherwise there is nothing you could do with it.

E. E. N., Ohio.—I can not tell what ails your bees unless it is that some time or other the brood has been chilled, causing the young bees to develop with defective wings or legs. Where the brood has been chilled enough to kill it, of course it is uncapped, and the bees dump it in front.

R. M., Ind.—I doubt the wisdom of sending you any more queens until you determine whether your hive is queenless or not. This hive may have a queen or a fertile worker; and if so, they will kill every queen you give them. The main thing to do is to give them a frame of brood from some other colony. Sealed brood will not do. It should be unsealed larvæ. If they raise cells then, you may be sure they are queenless. If not, then you can introduce another queen.

L. M. A., N. Y.—I believe it would be entirely practical for you to divide as soon as queen-cells begin to appear in the hives—that is, providing, of course, you do not care to run for honey, and desire only increase; but I would suggest that you run a few of your colonies for honey, giving them an extra hive-body so that the queen can have plenty of egg-laying room. Thus prepared I hardly think they will swarm, and you will in the mean time be learning something about controlling swarming, even when running for honey.

J. G. S., Ohio.—The best method of refining beeswax is to melt it in an earthen vessel or in a wooden tub, within convenient access to a jet of steam. Pour into the tub or barrel two pails of water. To this add about a gill of commercial sulphuric acid. Pour in the wax and turn on steam. After the mixture has cooked half an hour turn off the steam and let it settle, then dip off the free wax from the top. If you can not get access to steam you will be considerably handicapped, as you can not very well use the acid method with a metal kettle.

EDITORIAL BY E. R. ROOT

THAT article by Friedemann Greiner in this issue, on the honey-bee, is decidedly interesting. It will bear careful reading.

EDITOR HUTCHINSON, writing to Editor York, May 1, had this to say of his father-in-law:

> I remember with pleasure the visits that I made him when scarcely out of my teens, to talk bees. It was during these visits that I made the acquaintance of the girl who has since been my good wife.

And this is the way Mr. York philosophizes:

> Yes, of course Mr. Hutchinson made those visits to "talk bees" to the father, and finally talked "honey" to the daughter. Great scheme that. Favorably impress the parents, and half the battle is won—sometimes.

THE following note from the General Manager of the N. B. K. U. will explain itself:

> *Friend Root:*—I am glad to inform you that Mr. Buchheim, referred to in my Annual Report as having been put in jail on the ground that bee-keeping is a nuisance, has, through the efforts of the National Bee-keepers' Union, been fully exonerated and his bail discharged. This was a case where the Union appealed from the Justice's Court, which found him guilty of maintaining a nuisance, and had sent him to jail. I am just informed this morning of the success of our lawyer in the case. This is another victory for the National Bee-keepers' Union which is fully in keeping with its victorious record in defending the rights of bee-keepers. THOS. G. NEWMAN,
> San Francisco, Cal., May 16. General Manager.

I know our readers will be pleased to know of this result.

OUR OHIO FOOD COMMISSIONER.

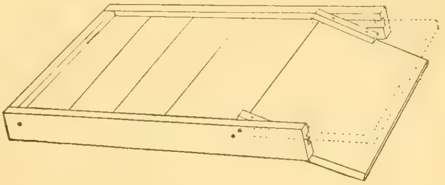
A SHORT time ago I learned of a place where they were adulterating honey in a neighboring city. I procured a sample, and after testing the same it seemed to me that the stuff was almost entirely cheap commercial glucose. I wrote, forwarding the sample, to our Food Commissioner, Joseph E. Blackburn, at Columbus, the man who has been doing such thorough work in Ohio in the line of pure food, and this is the reply I received:

> *Mr. E. R. Root:*—I have yours of the 13th, and note contents. I shall be very glad to bring action against any one selling adulterated honey or any other product. I shall always thank you to call my attention to any violations coming under your notice. The sample you speak of as having been sent by express has not been received; but as soon as it is I will act at once. I have no hesitation in saying that we shall certainly drive these goods out of the State, if adulterated.
>
> I have noted your kind reference to me on several occasions, and assure you they are very much appreciated. Very truly yours, J. E. BLACKBURN,
> Columbus, O., May 16. Dairy and Food Comm'r.

I have taken the liberty of publishing this to show what an energetic man we have. His work has been so thorough and energetic that the food adulterators, especially some of the patent-medicine men, had been trying, it would seem, to poison the minds of the editors of some of our leading daily papers—in fact, doing every thing they could to injure Mr. Blackburn; but in spite of attacks from all sources he stands up rigidly to his duty.

WELTY'S BOTTOM-BOARD.

MR. C. W. WELTY, of Lucas, Ohio, formerly manager of the apiaries belonging to W. K. Vanderbilt, at his southern residence in Asheville, N. C., and now with us, has devised a bottom-board after the manner of the one here shown. You will observe that it allows the usual ⅜ space under the frames, and at the same time permits of an entrance 2 inches deep; nay, further: It provides for a slanting alighting-board reaching from the ground clear up to ⅜ inch of the bottom-bars. If it is found to be desirable not to have more than ⅜ space under the frames, and yet equally necessary to have a two inch entrance, Welty's bottom board comes the nearest to filling the bill of any thing heretofore shown; but if, on the other hand, the deep space under the frames clear back is necessary, as well as the wide-open entrance, the Welty board will not be as good as some form like the Danzy.



THE CHAMPIONS OF LARGE COLONIES.

EVERY now and then I am receiving indorsements from bee-keepers, encouraging me to keep on talking about large hives. Dan White said to me a few days ago, "Why, I think nothing of running my ten-frame colonies three and four stories high, and it is these that give me the honey." J. F. McIntyre is another champion of double and triple deckers. Well, here is a sample from another of the prominent bee-keepers of California, Dr. Brodbeck, who writes:

> "I have been very much interested in your advocacy of a double brood-chamber; and I can fully indorse the plan, having had four years' experience with it. My present apiary has been modeled in accordance with the method, and some time or other I expect to give a detailed report of my success."

Yes, indeed, I hope Mr. Brodbeck will tell us about it.

Now, although I have been talking large hives, i. e., two and three Langstroth brood-chambers, don't imagine for a moment that it is some new idea of mine—I borrowed it from others. The large-hive scheme I got from the Dadants; and the more I have tested it, the more I know the Dadants have been right all these years; and they know that their own countrymen in France back them up in it. In this country they have been ridiculed, almost persecuted, because they have insisted that the large hives would give them more honey than the smaller ones. But some day we shall wake up and find out that they were right. A great many half believe it, but insist that their locality is not adapted to the running of such large colonies.

Some one says, "Oh, yes! every one believes in two or more stories when running for extracted." Well, try it for *comb honey;* it will cost you nothing.

FRUIT-BLOOM AND SWARMING; WORKING BEES IN A THUNDER-SHOWER.

From all reports it is evident that this is the most remarkable year for fruit-bloom and swarming that bee-keepers have known for many a season. I do not remember a time when swarming was raging in the middle of May around Medina as it has been this spring, and my time of active experience in the apiary goes back — let me see; how old am I? Well, it goes back twenty years.

I never expected much from fruit-bloom, and certainly did not this year have the remotest thought that there would be any swarming. As a matter of course, our apiary at our out-yard (like every year) was just as it came from its winter quarters, or, rather, it had not got out of them, for the colonies were in their packing-cases, just as they were put up last fall. When neighbors reported that our bees were swarming I could hardly believe it. "Never mind," I said; "the queens' wings are clipped; the swarms won't go off; and, besides, this fruit-bloom will not last very long, and the swarming will soon let up." But it didn't. As it rained nearly every day it was not easy to go down on the bicycle and stop the rumpus. Finally, when the roads did get a little better one forenoon, I started off, notwithstanding the sky was black, indicative of an approaching thunder-storm. Arriving at the yard the big drops of rain began to fall. But I was not going to turn back then. I proceeded at once, rain or no rain, to pulling the colonies apart to destroy the queen-cells, and scatter the brood in two stories. I had fixed up a few colonies, and the drops began to come faster; but I knew I should be drenched in the rain, and thought I might as well "make a job of it." I singled out the colonies that were clustered out in front; went through them, destroyed queen-cells, and scattered the brood in two stories, putting empty combs between each alternate pair of combs containing brood. In shaking some of the combs, the raw honey spilled all over my shoes, and into the grass; and, except for the taste, it appeared to be about as thin in body as that from basswood. The ominous clouds began to fulfill their predictions. It thundered and lightened; but for the fun of it I thought I would see what I could do in a drenching rain, and I did see — or, rather, it was difficult to see through my glasses as the water streamed down over the lenses. The poor bees clustered on the combs in such a way as to shed water, and seemed to be reconciled to their fate. I knew a warm shower would not hurt them, and so kept on with my work until it began to pour so hard that it was almost impossible to see or do any thing. Of course, I was wet through. Finally, in desperation, I grabbed up my gear-case Cleveland, hobbled into the saddle, and then proceeded to ride down the clay hill leading from the yard; but the wheel slipped as if it were on a big cake of soap, and I had to dismount and paddle through the mud, *wheel on my back.* I went over my shoe-tops in the puddles—tan shoes at that—and—

Just this very minute sister Carrie, flushed with her wheelride, and who has been up to the out-yard, comes in to tell me while I am writing these lines that there is a big swarm hanging on the bushes, and asking if I could not come and take care of them. I had supposed that swarming was all over at that yard, as the honey-flow had stopped.

A few hours later.—Let me see. Before the interruption I was telling you of my experience in plodding through the mud with my bicycle on my back, homeward bound. I need not tell you all the details. Suffice it to say, I did not get struck by lightning nor entirely covered with mud, to say nothing of being wet; but when I arrived home, I was, according to all accounts, "a sight for gods and men." I hived the swarm on my last trip, and came home without any casualties worth mentioning.

SAD DEATH OF OUR VETERAN FRIEND C. F. MUTH, OF CINCINNATI.

We take the following (considerably abbreviated) from the *Indianapolis Journal:*

> Morristown, Ind., May 16.—Charles F. Muth, of Cincinnati, was found dead this morning in his summer home, on his 600-acre farm, just a mile west of town.
>
> Mr. Muth was always very jovial; but yesterday he seemed morose, and told one of his former tenants, and, later, a neighbor, that there was a spot in his head that was paining him a great deal. He could always feel it throbbing. Fourteen years ago he suffered a sunstroke, and at times since then his head has pained him. In case it was suicide, it is quite probable that the pain caused temporary insanity There is nothing else known that could have caused him to commit the act. He was about sixty-five years old; and besides the large farm, which was held jointly between him and his wife, he was the owner of a large seed and honey store and other property in Cincinnati. He was supposed to be worth several hundred thousand dollars.
>
> He spent a good deal of time on his farm, going back and forth to Cincinnati almost every week. He was much interested in raising potatoes and sugar beets, and made a great many experiments with the farm, especially with sugar-beet culture, in which he was very successful.
>
> A wife and six children, all grown, survive. They have been summoned from their Cincinnati home.
>
> The latest evidence points to suicide. About 3 o'clock this afternoon Coroner Booher found the following letter on a tablet in the dead man's desk:
>
> "If I should die on my farm, it is my wish that I be buried in the same graveyard with August Miller, and in the same simple manner. My honest debts must be paid. Chas. F. Muth.
>
> "Morristown, Ind., May 15, 1898."
>
> It is impossible to get at the correct records now to find the amount of the mortgage on his six-hundred-acre farm here, but it is known to be about \$20,000. His farm is worth about \$40,000. No one here knew of the extent of Mr. Muth's financial trouble. He has often tried to sell his farm here, and about a year ago was offered \$32,000 for it, but would not take less than \$38,000. Mr. Muth was president of the German Protestant Orphan Asylum; also trustee of St. John's Church, and last year was elected a member of the board of control of Cincinnati. He made a large fortune in the honey business in Cincinnati.

Our friends may remember that, when I first became interested in bee culture, I very soon made inquiry in regard to the various bee-journals published in the United States or other parts of the world. I think my first acquaintance with Mr. C. F. Muth came through my desire to know something of bee-keeping in Germany. Friend Muth was very willing to give me all the information in his power, and for many years we offered the *Bienenzeitung* to our German readers through friend Muth's kind services. We had become quite well acquainted through correspondence, and I had promised to make him a call and see his apiary on the roof of his store. One day, however, I was surprised to meet a tall fine-looking man who spoke English quite brokenly. He introduced himself as "Mr. Moot, of Cincinnati." He told me we had had some little correspondence, but somehow I did not quite catch on; but when I saw his name on some circulars, "Muth," then I knew him at once, and we shook hands over again and took another start. He brought along some of his famous honey-cakes. I took him over home and introduced him to Mrs. Root and the children. Then he sent me a lot of his honey-jars and tumblers in which he sold the honey in such immense quantities. Many of our readers, especially the older ones, remember how ably friend Muth stood at the head, and represented bee culture in America among the German people. When I spoke of making him a visit, or putting the street-number on his letters, he said everybody knew him in Cincinnati, and I guess this was pretty nearly true—at that time, anyhow.

C. F. MUTH.

Of course, there were complaints occasionally from dissatisfied customers against A. I. R. and C. F. Muth, and others; but Muth and I were building up a trade with bee-keepers, and we both tried hard to keep things pleasant. I remember once, when there was some misunderstanding, saying to a friend who complained, that I had so much confidence in friend Muth, that, if *he* did not make the matter right, *I* would. Mr. Muth heard of it, and laughingly said he had been returning the compliment. When his customers complained of A. I. Root he would say, "I know Mr. Root, and he is a good man. You explain to him all about it; and if he does not make it all right, *I will*." This arrangement was kept up for a number of years.

Mr. Muth was one of the cleverest, most whole-souled, and generous men I ever knew. He tried to be right and fair; but when he met somebody who wanted to be unfair, or even if he got it into his head that somebody was trying to get more than was just, he sometimes showed that his good nature *might* give place to something quite different.

Of late years I have felt that our jolly, whole-souled friend had too much business on his hands. I have heard him speak a good many times about that farm alluded to in the ex-extract above; and I fear, from what I have heard from those who had sent him money, that of late his prompt energetic business habits have not been quite up to their former standard. I wonder if there is not a wholesome moral here to more than one of the veteran bee-keepers who are reading these words. Suppose friend Muth had accepted the $32,000 that was offered him for the farm, had paid up all his debts, got a little place near home, and taken things easy; might he not have been spared to cheer and give life to our national conventions for some years to come?* In view of the injury by sunstroke, he should have been careful about undertaking too much business. I know it seems hard to sell property for less than it is really worth; but we all know, and many from sad experience, that money and property have comparatively little to do with real happiness and contentment. I fear our poor friend brooded over his financial affairs, and imagined they were worse than they really were. From the statement given above I infer that, after every thing is settled up, there is a large property still for his wife and children. How gladly they would have borne his cares and troubles, and let him take things easier had he permitted them so to do! The bee-keepers of our land can remember our departed friend with grateful feelings for what he has done to bring about the present advanced state of bee culture, especially in the way of selling, and getting it into the regular channels of trade. Even if some of the friends have suffered somewhat by neglect, they may learn by the above that our old friend had been for years a sufferer; and we can afford to let a broad charity help us to forgive and forget whatever was not exactly as it should have been.—A. I. R.

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*Too much property on one's hands, and especially where the property is in different places widely apart, has been the means, as I happen to know, of wearing out prematurely more than one good man. Shall we not, each and all, think over and over that beautiful and suggestive text that commences, "What shall it profit a man?" etc.

OUR HOMES,

BY A. I. ROOT.

Wherein thou judgest another, thou condemnest thyself; for thou that judgest doest the same things.—ROMANS 2:1.

Some time ago I wrote, quoting the words of an eminent divine to the effect that praying for the presence of the Holy Spirit may result in making us very uncomfortable. The idea was a strange one to me, because I had until then supposed that the presence of the Holy Spirit was more necessary to one's real happiness than any thing else in the world. My old pastor, the Rev. A. T. Reed, once said at a prayer-meeting that there was one thing we could always pray for and feel that we were making no mistake; and that one thing was the presence of the Holy Spirit. I have prayed for this more of late than usual, because so many things have been coming up where I felt I was in danger of getting astray. I have felt more than ever before that I need God's guidance and wisdom. I have felt it especially, because more responsibility has been resting upon me. More people are employed here than ever before since our business began. Greater investments are being made, and greater temptations have been assailing me from certain quarters. The special temptation has been to be impatient in regard to small details. The temptation would come something in this way: Where hundreds of dollars are at stake we can not fuss, as we have been in the habit of doing heretofore, with the little transactions where perhaps only a dollar or may be a nickel is at stake. Some brother complains that he has not been used fairly. Our overworked and worn-out clerks can hardly in justice take time to hunt the matter up, if it involves only a very small sum. I have been in the habit of adjusting these little matters by first inquiring what the sum is at issue. If the amount is small, and our friend is evidently correct and honest about it, I have felt that it would be wise to pay it *without* investigation.

Now, I know very well that right is right and wrong is wrong; and the *principle* of the thing is, many times, more important than the amount of money involved. Well, I have tried to fix all these things in a Christianlike way; but I fear I have been sometimes tempted to be a little rude and brief because of the thought that we are now a pretty *good-sized* institution. I have tried to remember our Savior's exhortations and parables, especially the one where he says that he that has been faithful in few things shall be made ruler over many things. I have *tried* hard to be faithful in little things.

Since praying for the influences of the Holy Spirit, as I have told you, I have greatly enjoyed reading the Bible, especially our morning lessons. Reading over one of our Sunday-school lessons a few weeks ago I was forcibly impressed by the example of the unmerciful servant. He owed a king ten thousand talents, or, as we would say, a debt of over a million of dollars; but when he acknowledged his indebtedness and utter helplessness, and even fell down at the feet of his lord, promising to pay all if he would have patience, the debt was forgiven, and he was a free man. But almost immediately afterward, on meeting a fellow-servant who owed *him* only a hundred *pence*, he was so ungrateful, so base and vile, that he took his fellow-servant by the throat and demanded *every penny* (even when the poor fellow went down on his knees and used the exact words that he had just been using to the king), and cast him into prison without mercy. Of course, you are familiar with the whole story. It has been read and talked about and preached about until we all know it pretty well. But the part of it that took hold of me, and has hold of me even yet, is the scene where he took his poor unfortunate fellow-servant by the throat. In reading this passage over, even as far back as when I was a child, I used to wonder why Jesus presented such an extreme example as this; and, in fact, there are *two* extremes to the parable. The amount this man owed the king seems away out of proportion to the events of daily life. Nowadays it is very unusual for one man to owe another a million of dollars. Perhaps we have some such transactions among the wheat-gamblers in Chicago, but surely nowhere else. The *amount* was extravagant, and the *forgiveness* was extravagant. Who ever heard of letting a man go scot free when he owed more than a million of dollars, not even asking him to pay a cent?

Well, if anybody *ever* felt gratitude this man ought to have done so. Why, what an *awfully* mean fellow he must have been! We are told this fellow "went out after he had been forgiven the debt." He had only just left the presence of the king; and before there was *time* for any great provocation he grasped his unfortunate fellow-sinner by the throat. I have heard about people who were "too mean to live." If there ever was such a man, this was the one. Now, Jesus never uttered a parable without having a good reason for so doing; and as we grow older we discover that there was an especial reason for many of the things that used to seem to us so extreme and severe. Why did he draw this picture with such tremendously bold and severe strokes? It has just been coming to me for a few days back that the reason of this is because there is more or less of the same spirit in all of us—ingratitude. My dear friends, you have given me many kind words in the years that are past. A dear brother wrote in a letter that is in my hands, "Mr. A. I. Root must be a very lovable Christian man." I crossed this part of his letter out, even though it goes into the Kind Words column; but since I crossed it out I have changed my mind, and I will put it in print right here. No doubt through God's grace I have been able to show at times a lovable and Christian spirit; but, oh dear me! nobody knows—at least none but the dear Savior—how I have battled to keep down that other and *un*lovable spirit. Let me illustrate:

A man did a very wrong thing. When it came to light, people generally were severely denouncing him. I myself used words that were terribly hard and severe; but they had scarcely passed my lips before I almost turned pale when memory told me that, years ago (before I made any profession of Christianity, of course), I myself was guilty of something like it; the harsh words I had just been using might, with great truth at one time in my life, have been applied to *me;* yet my friends and neighbors were considerate enough to "deal gently with the erring." As I mentally considered the matter I got my breath, as it were, and said to myself, "May God forgive me;" but the presence of the Holy Spirit did not let me off quite so easily. I went about my work, but something kept ringing in my ears, "Thou art the man." David once unconsciously pronounced sentence against himself, as you may remember, and it was a terribly hard and severe one too. But the old prophet fearlessly raised his finger, and, looking the king fully and fairly in the face, said, unflinchingly, "*Thou* art the man." Poor David! He bowed in humiliation and shame, and accepted the sentence that God had pronounced through the old prophet for his sin and crime. Now, is it the Holy Spirit that has been warning me, and urging me to be careful and merciful? I verily believe it is.

During the month of May I am always troubled more or less by dogs running over my plant-beds. You may say the plant-beds should be fenced up. Well, that would make us no end of trouble, for they run clear along in front of the factory. Our small boys skip over after vegetable-plants, pie-plant, strawberries, and back again to customers. A fence would make lots of needless steps, and, besides, there are comparatively no fences in Medina. They are getting to be out of fashion. There is a superfluity of dogs almost everywhere. One of our daily papers, in discussing the matter a while ago, said with comic seriousness, "Really, now, wouldn't half the dogs do the work?" The point of the joke was that there is not any work, and never has been, for nine-tenths of the dogs. But then you know, I am not interested in dogs—at least not just now. Well, the other day I happened to look through the windows of the seed-room, and saw a good-sized dog walking back and forth in the soft rich ground among my celery-plants, just after the rain. I went out to drive him away (just as I drive the chickens, you know) so he would not go back again; but instead of going through the paths, he seemed to go over the beds and do as much harm as possible. Finally he lay down and curled himself up right on some of my choicest plants. He was in a sort of "corner," and evidently did not know what I wanted of him. A little stick about the size of a lath lay right handy; and when he would not get off the bed by scolding I gave him a smart rap with the stick, telling him to get up and go off. He whined with pain, and finally, thinking I was just doing it to torture him, he began to show fight, and snapped at me, tearing up the plants, and making more ruinous disorder every moment. I raised my stick to give another whack, and then remembered about the man who took his helpless fellow-servant by the throat. I did not strike the dog any more; but I moved to one side, and exhorted him to get away, which he did. A little time afterward I saw a teamster in front of the store pick up his lines to start home. Then my attention was attracted by a dog springing up in front of the horses' heads, and showing by his antics that he was greatly pleased about something. In fact, he was rejoicing to such an extent that one of the horses stepped on him, and then the wagon-wheel ran over his tail, or something of that sort. But nothing could check his joy, for they were finally "going home." Yes, it was the same dog that spoiled my plants. When his master came to the store and stayed a good while he felt lost and troubled. Who knows how much a puppy may suffer when he finds himself without his master in a strange town? They would not let him come into the store, and so in his anxiety and trouble he got around to the seed-room, and was standing on my plants while looking through the window to get a glimpse of the one he loved. When his master and the well-known horses started to go home, then he knew his troubles were over, and I presume he thought in his dog mind that, if he once got safely home, he would never risk again coming to a place where a horrid cruel man pounded puppy dogs when they were not doing any thing out out of the way at all—at least so far as they knew. You see my heart was in my plants. The dog did not know any thing about plants. If it had been explained to him that he was making mischief, and that the hard graveled paths, instead of the soft beds, were the proper place for a dog to walk, why, he would most gladly have kept in the paths. Now, the Holy Spirit, through the voice of conscience, seemed to be teaching me all this as by an object-lesson. The dog had his ideas and notions, and I in like manner had mine. The dog was as honest and well-meaning as anybody could be; and I—well, most of the time I hope and pray that I, too, mean well toward my fellow-men; but the Holy Spirit seems to be trying to teach me that I am far too ready to take people "by the throat." No doubt they need taking by the throat many times. When a bad man is deliberately and purposely wronging a child, if, when the matter is fully explained to him, he persists in keeping on, the strong arm of the law should take him by the throat and hold him in its grasp until he promises to behave. If a midnight assassin pushes into your bedroom, and you get him by the throat, by all means hold on. Choke the life out of him before he can use the revolvers he is provided with, if you can; but, dear brother, you ought to be very sure that he *is* an assassin, and that he is provided with revolvers. Many a man has killed a neighbor or one of his best friends, under similar circumstances, because he was not sure he was right.

There is another phase of this little story. It is a man who had been *pardoned* of a great debt who was so harsh and severe on his fellow-servant. They used to say in slavery times that the most cruel overseer in the world was one who had been promoted from the place of a common slave; and somebody has said (but I hope it is not true) that the harshest and most severe housekeeper with her hired girls is the one who has been a hired girl all her life, and who has been suddenly promoted by marrying a rich man. Is it true that there is a tendency in this direction? After God has forgiven us our debts (or our sins), can it be true that at such a time we are less inclined to be merciful to those who are indebted to us? From the very fact that this thought takes a prominent place in that wonderful prayer, may we rightly infer that we are constantly in danger of *forgetting* what we have said in our devotions, "Forgive us our debts as we forgive our debtors"?

There are bee-keepers among our readers who have struggled hard to pay off the mortgage on the little home. After years of toil and prayer, God has seen fit to grant your petition. The debt is wiped out, and the prayer is answered. Now, are you going to be a better Christian* — are you going to have more faith after God has lifted the load, or are you going to be proud, and say by your actions, "I am all right now, and do not need to work as hard (nor to pray as hard) as I have been doing. I can take care of myself now pretty well"? Does that sound pretty hard and rough, dear brother? Well, it suggests what I have found in my own self. I am getting old, and it is right and proper that I should be relieved from some of my cares and worries; but if the relief induces me to pray less, then it may not be a very good thing to give me rest, after all. A few days ago I sought the old spot where I have prayed so many times; and my prayer was something like this: "O Lord, I come to thee again in trouble. I come to thee because thou has helped me and shown me a way out of these same troubles during all these years that are past and gone. Thou hast piloted me safely through *many* perplexing trials; therefore I come to thee once more in faith believing. If, however, it is thy will that I should bear this grievous burden for Christ's sake, give me grace and strength to bear it patiently." Do you know that I felt happier and stronger right away? In fact, I felt almost glad that the trouble had come, for it had sent me back to the feet of my Savior. Yes, it had sent me very low at his feet—lower than I had been for some time before. Now, do you think it is always best for us that we should be *spared* these trials? Why, if every thing succeeded and nothing went wrong, I am afraid I should get to be a lazy and indolent Christian; and I think the servant who took his brother by the throat must have been a lazy and indolent servant. Cowards are always lazy and indolent.

Now, even if the presence of the Holy Spirit *does* make one at times feel very uncomfortable, I am going to continue to pray that his influence may be ever near me. I hope he may chide and restrain me when I am chasing the dogs out of the garden in an unchristianlike way; and may he ever so much more chide and restrain me whenever I seem called upon to stop iniquity and fraud and injustice, wherever I may meet them.

HEALTH NOTES

BY

A. I. ROOT

PURE WATER TO DRINK.

I am ashamed to think that I have lived to be toward sixty years old without having ever discovered what a delicious and refreshing beverage pure water is. I am ashamed to think I have been so many years in ignorance of one of God's most precious and greatest gifts. I have now been drinking distilled water in considerable quantities three or four times a day ever since we got the Sanitary still; and the more I drink of it the better I like it. You may urge that it costs something. The proprietors of the machine say it costs two cents a gallon when you burn gasoline to produce it. But let us say it costs *five* cents a gallon. Lemonade, cream soda, and other "temperance" drinks, cost five cents a *glass*. Surely we can afford it when everybody may have it at a cost of only five cents a *gallon;* and it does not seem to me I shall ever more want summer drinks, especially sweetened drinks, when I can have pure water instead. It is not because it is a new hobby or notion I have got. Several times I have tried drinking cistern water instead, and boiled it as I used to do to be sure it contained no germs, either animal or vegetable. But the cistern water does not "set" as well as does the distilled water. It leaves a suspicious taste of some foreign matter in my mouth, and the digestive apparatus complains just a little that it does not have the solvent and refreshing power of *aqua pura*. I have read before that distilled water possesses solvent properties considerably beyond those of any other. I have been told that it is much more wholesome, especially where there is any tendency toward indigestion; but I never believed it was possible for one to learn to enjoy and *thirst* for pure water as I do. The rain water at Bermuda is something like it; but rain water is pretty sure, unless exceeding care is exercised, to dissolve something from the roofs of the houses, or from the stone tanks that contain the water. I suspect the principal impurity in the average cistern water of towns and cities comes from coal smoke that falls on the roofs, for cistern water has a distinct taste of smoke to one who has been accustomed to drinking *distilled* water for several days. Another thing, the reservoir of the Sanitary still, after water has been boiled in it for a week, shows a darkish deposit that looks as if it might be smoke or other impurities taken from the water washed off from the slate roofs. If you should happen to prefer distilled water to either tea or coffee, it might be actual *economy*, rather than an expense, to purchase and use a Sanitary still. When this whole big world of ours has a craze for drinking pure water, and for *telling the truth* (for I declare the one makes me think of the other), what a millennium we shall have!

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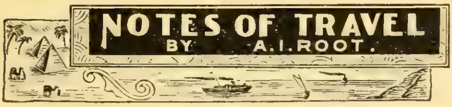
* Dear friend, after God has granted your prayer are you sure you always remember to thank him, as you proposed at the time of your earnest petition you would do? It may not be financial troubles. Suppose a loved one has been near death. In very anguish of spirit you have prayed that the precious life might be spared. Now look back through the years that are past, and answer me truthfully: When God granted your prayer, did you afterward love to read your Bible more? Did the answer to prayer prompt you to kneel to him oftener in thanksgiving and praise? Sometimes—nay, frequently—God does not see fit to spare the loved one. And is it not true that affliction sometimes brings us nearer to him than granting our requests? Alas, poor humanity! Truly, "he knoweth our frame; he remembereth that we are dust."

Mr. J. E. Blackburn, Ohio Dairy and Food Commissioner, in a recent address said as follows:

> Is it any wonder that a child that has been raised on soothing-syrups, or other preparations containing morphine, should take to cigarettes before it is able to leave its mother's apron-strings?



NOTES OF TRAVEL

BY A. I. ROOT.

SOME OF THE IMPROVEMENTS IN WHEELS FOR THE YEAR 1898.

It is very poor policy to run any kind of machinery when there is no reason why it should be running. The man who lets his windmill run and wear itself out because he is too negligent to stop it is a foolish man; and the manufacturer who lets belting and shafting wear out in like manner, when they might just as well be standing still, is not a prudent and economical man. Well, in the same way we have for years been running the chain and sprocket-wheels on a bicycle when they might as well have been much of the time standing still. Yes, more than that: Most bicycle-riders go through the motions of pedaling when the muscles of their limbs might be resting, so as to be ready for the hill in the distance. There has always been an objection, however, against removing your feet from the pedals, especially where the roads are bad, and where you need perfect control of your wheel. The new 1898 Eclipse has an automatic arrangement whereby the pedals, chain, and sprockets may all be at rest, including the legs of the rider, whenever he is going down hill. Whenever you wish to use the pedals, just pedal ahead.

Now you may say, "What is one going to do when he is under the necessity of back-pedaling?" Well, the Eclipse folks fix this by arranging an ingenious automatic brake that operates whenever you move the pedals backward. When I am off on a trip with this wheel, *especially if I have a strong wind at my back*, I am pedaling only half of the time; for you know that, on any trip, no matter which direction you go, providing you return to the starting-point, there is just as much down hill as up hill, and with a good wind you can rest whenever there is level ground and good roads. I use this wheel constantly in going back and forth between the house and the factory, a distance of some 400 feet, on stone flagging. As there is a gradual fall of about 6 inches in 100 feet, my wheel carries me nicely over the distance without touching a pedal at all.

Now, I have discovered two very nice things about this wheel that I believe even the manufacturers do not know of—at least they have not mentioned them in their circulars. Whenever you are going over a piece of road such as we have around Medina every spring, you do not need to have your pedals strike the ground, even if you run into a wagon-track that is ever so deep. Get up sufficient momentum to get through the bad place, and stop pedaling till you get out of the rut.

Another thing, who has not been annoyed by having a wheel that is in real good order, going ahead or going backward, or tumbling down, whenever one tries to stand it up anywhere? With the Eclipse, just back the wheel a few inches and the rear wheel is locked by the brake. When you want to start, push it forward and it is all loose again.

The second improvement in wheels that I have noticed particularly is the "gear-case." Ernest and John and Constance have each a Cleveland thus protected. We have not had a very dusty time yet this spring; but they say the chain never gets dusty or gritty, no matter if you run through the mud and rain. This is quite an important item; for the easiest-running wheel in the world, if the chain is exposed to dust or water, will gradually get to running harder and harder for every mile you travel until you stop and clean off the chain and give it a coating of lubricant.

And this brings us to a consideration of the chainless wheel. I have had one of the Columbia chainless that cost $125, for about a week past, and, somewhat to my surprise, I am forced to admit that it runs as easily as any chain wheel I ever rode. It is certainly equal to any for climbing hills, and, so far as I can see, the claims made by the Pope Manufacturing Co. are not at all exaggerated. As to whether it will keep running still *easier* instead of harder, as long as it is used, only time can determine. The Columbia chainless is certainly a very nice thing. It does seem, however, that $125 is very much more than such a machine need cost. My impression is that, after the machinery has been perfected for making these chainless wheels, they can be sold at as low a price, or possibly less, than the ordinary chain wheels. The first cost of a factory for making the chainless is, however probably considerably more than for chain wheels.

A VISIT TO THE JORDAN CELERY-FARM.

May 26.—Since the above was written I have made a trip of 16 miles to the Jordan celery-farm; and I am happy to say that the chainless is not only equal to, but ahead, in point of ease of running, of any wheel I have ever before ridden, especially in climbing hills. On a part of my trip there were some sandy and dusty hills; and when many teams made a cloud of dust as I was climbing along the hill, it seemed strange that I did not as usual feel the effect of dust on my chain. The beveled gears are perfectly inclosed, and run constantly in thick oil. This one fact alone is a most important item. And, again, with the gears there is almost no lost motion—no jerk or play, or clank of machinery when you change from pedaling ahead to back pedaling.

I found the celery-farm looking wonderfully nice, for the recent abundant rains have kept their plants going almost without irrigation. I had planned so as to see the effect of the sunlight across the swamp near sunset. Away off in the distance the rows ran toward the setting sun like threads of emerald tinted with gold. I never saw plants before of such beautiful color, and so near alike that there is neither a poor one nor a best one in the thousands after thousands, the bright green of the plants contrasting most beautifully with the almost jet blackness of the damp mucky soil.

The onions were also looking remarkably well. I have told you of their troubles from blight in former years Well, they think they have discovered a remedy by the use of a dressing of common salt. Less than ten miles from Creston, in Wadsworth, there is a great salt-factory. This salt is pumped, as I have told you before, from a well 1700 feet deep; and then there is a sort of waste product, in the way of salt, that is furnished cheaply for agricultural purposes, that our friends are utilizing on the celery-farm.

Although the new (close) celery culture has not been a success heretofore, they are still trying about half an acre again this season. I believe the blight was a little worse in the close planting. There was also more trouble by the plants running up to seed. This latter was probably occasioned by a lack of sufficient water. To remedy the blight, salt had been sprinkled all over that half-acre. At one point a new hand was set to sprinkling. I presume he *thought* he could do it all right; but he got on too much, so there is one spot where a great part of the plants are killed out. Salt may be good for certain purposes; but be careful about getting on too much. I suggested a manure-spreader, or some other kind of machine for putting it on evenly.

Jordan Brothers are using chemical fertilizers to some extent; but they told me that, although it answered for a time, they found there must be, once in two or three years at least, a good dressing of stable manure in order that any commercial fertilizer might do its best. The season has been so wet thus far that the Breed Weeders have not been used very much. The consequence is, gangs of men and boys were at work with their hand cultivators, and down on their hands and knees getting the weeds out. This is the only serious drawback to the Breed weeders and other machines of that type. They can not be used in wet weather; and if the weeds get ahead of you during wet weather, you have got to get them out with cultivators and by hand work before you can get your weeders going. I am glad to notice that these weeders are all getting to be very much lower in price. Machines that sold for $10 a year ago are now offered for but little more than half that amount.

A SHORT SERMON IN REGARD TO DELAY IN FILLING ORDERS.

A. I. Root Co. Dear Sirs:—"Thou hast loved righteousness and hated iniquity."—HEB. 1:9. A very nice text to preach a sermon from; but how about my order, No. 64,712, that I sent in six weeks ago, and which *you* said would be delayed a week or ten days longer than usual? You usually filled orders for me inside of ten days. Ten days in filling and ten days delayed make twenty days. I have looked for the goods ever since the twenty days were up; went four miles to the depot five times to see if the goods were there; disappointed all my customers; made enemies; have had no end of trouble and vexation of spirit, just because of your utter indifference to the above text, and disregard for "doing unto others as you would have them do to you."

To be sure, my order was small; but *you say* that small orders receive the same prompt attention as large ones. Then, again, I have dealers' rates, and there is not so much money in my orders as there is in others; but *you say* that money is not your god, consequently that should not have delayed my order twenty-two days longer than *you said* it would.

You say you are not greedy for more jobs Then why are you running advertisements in all the leading agricultural and bee papers, and voluntarily sending catalogs out all over the country?

I expect this is all the "*boys*'" fault; but they should have been trained to "love righteousness and hate iniquity." I have written the above to show you how matters appear to the eyes of a dear bee-keeping friend. I have written you several times in regard to the order, and have not received any reply. You have my sympathy for not being able to handle the *whole* supply business, as I know it grieves you to let some of it go; and if you want me and my customers to read GLEANINGS with less skepticism you will ship my order at once. Yours truly,

Oceola, O., May 17. E. B. FOSTER.

P. S.—This letter would be nice to fill up some of the extra pages of GLEANINGS.

At the close of the above letter our friend seems to think there is some doubt about our putting it in print, even though he suggests doing so. In choosing matter for GLEANINGS it is not a question as to whether it would be for *our* interests to publish certain letters so much as it is whether such letters will prove to be a general benefit to our readers. In the present crisis I think the above will be a benefit, and I think it belongs among what might be called "kind words," even though some of the charges are pretty severe. The brother calls himself "a dear bee-keeping friend," and I believe he is and would be now if he were not considerably vexed when he wrote. I do not blame him for feeling vexed, and yet I do not see how either myself or the boys can help the trouble he mentions. When we say a "week or ten days," especially when the letter is one of a thousand, so the writer can hardly make a personal matter of it (even if he tried ever so hard), the expression must be taken with considerable latitude. In regard to going to the depot five times to see if the goods were there, I would urge the friends not to go after them until they have received a notice of shipment. When I saw how things were going, I myself employed an extra clerk, and invested a good pile of dollars in postal cards. I employed this clerk expressly to see that a postal card went to *every* customer just as soon as the goods were put on the train; then our friends did not have to wait for the bill of lading, which is sometimes several mails behind, in getting copied, recorded, etc.

I fear our good friend Foster does not recognize the fact that he is only one of a thousand. It is our duty to consider each and all, as well as any particular person. Our expression that "small orders receive the same attention as large ones," is true. Friend Foster, if you were to interview the clerks here in our office, and all over the establishment, they would be astonished at the charge you make, that there is *anybody* around here who is pushing the large orders more than the small ones. If a carload is almost ready to go, of course we make extra effort to get that *car* started. To do this our packers have frequently worked till midnight, and then been at their posts at the regular hour in the morning. But it was not because we got more money for the carload, for really we do not get as much for the same goods, but because a great quantity was held back just because of the lack of a few things. Neither is anybody around here looking over the orders to see which one gives us the most profit. Every member of our force is, I am sure, trying to get every thing off out of the way that can be got out. Certain goods are on hand, and can go as well as not. Others have to be made to order, and we must wait for them. Dear brother, it certainly was *not* a love of money that delayed your order. In fact, that never entered into the consideration. Every member of The A. I. Root Co. is a professing Christian, and you do not know how it pains us when we hear the suggestion that *money* is our god. God forbid! I am sure you do not mean that, dear brother, and that you will feel sorry you said it when you see this

Yes, you will probably find our advertisements running in the agricultural and bee papers. Our contracts for advertising were all made up last fall, and paid for in advance, for that is the way we do business. We could perhaps have these advertisements taken out and put in at a later date, and we have seriously considered doing so. We are *not* now sending out catalogs except to people who call for them. You may say we should stop doing this. But, dear brother, our catalogs contain a vast amount of information that is of great value to many people, even if they do not trade with us. Another thing, a great variety of goods are ready to go by the first train. Spray-pumps, smokers, wheelbarrows, enamel cloth, seeds, etc.—in short, almost every thing that we do not manufacture is kept in stock in great quantities ready to go off by the first train. Bee-hives and sections, and other things made in the wood-working departments, are the only things in the line of goods that we have to wait for. We have kept ahead pretty well on sections by purchasing almost all that any manufacturer in the United States had to spare.

Associated as I am with my sons and sons-in-law, it would ill become me to shirk responsibility by saying the delays and mistakes were "the boys' fault." I have never said that yet, and, God helping me, I do not mean to. If they make mistakes, even in doing things that I sometimes disapprove of, I expect to stand by them and help them out; and I hope God will give me grace so that I may forbear even saying, "I told you so." The state of affairs just now is bad in the respect you mention; but there is no civil war in our ranks, thank God. The boys have been trained to love righteousness and to hate iniquity, even if I did not have the training of them all; and, so far as becomes me, I expect to train them every day in God's ways. One of my pleasant surprises of late, however, is that these boys are beginning to train me sometimes in better ways; and I hope I shall never be above accepting wholesome truths from those who are younger than I.

I am afraid it is true that you and others have written several times to hurry up orders, without getting a reply. But this is a new departure in our business. I do not know but I shall have to get still another clerk and another lot of postal cards, and when a complaint comes in regard to delay I will have this new clerk send a card saying we can not help the delay, and that we positively can not spare a clerk, who has the ability and experience, to go into the mass of unfilled orders, search out a certain one, and tell just why it can not go. Dear friend, you seem to think it is a simple matter to ship your order at once, and let all the rest go. We would gladly do it if we could, and still keep right before us the golden rule—that is, be just to all, and not put the man ahead who complains the loudest.

In writing this I have considered that, by the time it gets before our readers, we shall perhaps be getting out of the woods — at least I hope so. May God give grace and wisdom and patience and forbearance all around during this busy season; and may he help us to be helpful one to another in the very widest and best way.

Tobacco Column.

The following was handed me on a slip of paper. I do not believe there need be very much discussion in regard to it. Some may think it is too strong; but let every one consider it carefully according to the dictates of his own conscience. I think it will do good:

TOBACCO IS A

Curse in the postoffice,
Curse in the depot,
Curse on the train,
Curse to your land,
Curse to your health,
Curse to your income,
Curse to your body,
Curse to your country,
Curse to your teeth,
Curse to your breath,
Curse to your life,
Curse to your clothing,
Curse to your family,
Curse to your good name,
Curse to your manners,
Curse to your religion,
Curse to your church,
Curse to your boys,
Curse to your morals,
Curse to missionary work,
Curse to the air,
Curse to men,
Curse to an office,
Curse on the street,
Curse to man's rights,
Curse to God's rights.

By the way, our daily papers, which are certainly not biased very much in the matter, have been telling us repeatedly within the past few days that the cigarette habit was throwing out more men who enlist in the army than any thing else. And in connection with this let me mention just another point. A pamphlet or primer, or whatever you may call it, was thrown into our home or on to our porch, by somebody, I do not know who. It was the advertisement of a special brand of tobacco. The front cover was embellished in colors with an indecent picture. I do not think it came through the mails, because I feel sure such a thing would never be permitted by Uncle Sam. An agent must have been employed to throw it around to the houses or give it to the schoolchildren. In the back part of the book was a defense of cigarette-smoking; and they had got learned chemists, at least so they claimed, to certify that cigarettes on the Chigo market contain nothing deleterious to the health. They said cigarettes are made of pure tobacco, and, in fact, contain *less* nicotine than cigars. We will not stop to discuss that point just now; but if there are those who are inclined to defend tobacco who read GLEANINGS, let me beg of you, dear brother, to consider this one fact: The men who put out a pamphlet in defense of their tobacco business deliberately planned a picture for the outside cover that would surely do harm to your boy or mine, unless the boy has been so carefully brought up that he is almost beyond the power of any thing in that line. Why should the tobacco habit be always found linked arm in arm with licentiousness and things too low to be even mentioned in the pages of a home journal? Just now the Christian men and women are having a regular fight to stop the work of putting vile pictures in packages of cigarettes, thus getting them into the hands of our boys without going through the mails, and especially into the hands of that class of boys who keep such things carefully concealed from the eyes of their parents. Has GLEANINGS been waging war too severely on the tobacco habit? I leave you to decide.

A NEW KIND OF HOUSE-FLY.

Could you recommend any thing for destroying a certain kind of fly that swarms into the house every fall after the first frost? They fill themselves up with buckwheat honey, and persist in hibernating all over the house, under picture-frames, and between the curtains. They will swarm in when the windows are closed. I can not "screen" them out as we do the common housefly. They come in through the smallest crevice. I have tried to smoke them out with sulphur, and have used insect-powder, but it doesn't do any good. They are a terrible nuisance. They trouble us all winter long. When it is mild weather they will fly out the same as bees do, and then come back again They soil every thing badly wherever they hibernate.
MRS. NORMAN CURREY.

Evans, N. Y., March 22.

My good friend, Mrs. Root has been worried and annoyed more than I can tell by just the kind of flies you describe. Our windows are balanced with weights. She thinks the flies crawl out of the holes where the cords run through over the pulleys. They act just as you describe, only a great deal worse. Our windows in the attic are sometimes literally black with them. I told her to open the windows a little and let them out, and then they would never come back. When it is warm enough they roost all over the side of the house, and then manage, by some hook or crook, to get in again through the crevices — at least, she thinks they do. I have advised the use of bisulphide of carbon, but we have not yet got around to trying it. That will go into every crack and crevice wherever flies can creep. But you would have to vacate your rooms during fumigation. We are thinking of saturating little balls of cotton with the bisulphide, or "fuma," as it is called for short, and drop these saturated balls in the holes right where the cords run through the casing. Will the entomologist at our Ohio Experiment Station tell us about this new fly? As a rule we are glad to see *new* things; but when it comes in the shape of the fly described above, we feel *gladder* to see them clear out and get away, even if they *are* new. I will explain to the friends who have not as yet seen these new flies that they seem to be a sort of bluebottle fly. They make a horrid buzzing when you light the lamps. I never knew before they were partial to buckwheat honey, but may be you are right.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

SOME OF THE NEW STRAWBERRIES—ONE OF MY HAPPY SURPRISES.

We have been picking strawberries that were started under glass, for a month or more; and Earliest and Darling, that were not under glass at all, for the past three or four days. The Earliest was only about three days ahead of the Darling. The Darling gives rather larger berries. On account of the hot weather and lack of sunshine, both are rather tart this season. Well, my happy surprise was not in regard to the Earliest nor Darling either, but it was in finding this morning some great big Nick Ohmers, not red on one side, but red all over, and only three or four days behind the Earliest in earliness — perhaps right *with* the Darling in that respect. But the Nick Ohmer is ever so much larger than either of them. We had such a call for plants last fall, at 25 cts. each, that we did not save very many Nick Ohmers. In fact, there is only one bed, containing about fifty plants, and these were put out very late in the fall. Of course, they have had good cultivation and plenty of manure. But this would not quite account for their being away ahead of almost every thing else in any way that I can see, unless it is in being extra early. Why, an acre of these great big berries, large, handsome, and earlier than any other large berry in the field, would be worth a lot of money. I would give something to be able to present to the readers of GLEANINGS a picture showing the Nick Ohmers as they stand in that bed this morning. I wish others would report whether they have had a like experience with the Nick

Ohmer. Michel's Early, that we used to call ahead of all the others, is not anywhere near ripening at the present time, May 30; but, to tell the truth, Michel's Early has not been fussed with quite as much as these newer kinds—at least, not this season. You see, I want to be honest about it.

Now, none of these varieties mentioned is likely to bear the great quantity of berries that some of the later ones do—say Haverland, Warfield, Parker Earle, and last, but not least, the Clyde. I do not believe there is another berry on our grounds containing such great heaps of green ones at the present time as the Clyde; and I notice the reports are now greatly in favor of the Clyde as a tremendous bearer. We have potted plants now to fill all orders for Earliest and Darling; and we have runners already in the pots, of almost all other kinds we advertise, potted in jadoo fiber.

ANOTHER SURPRISE.

Yes, and this is a happy one too, even if it does run against the one above somewhat. On page 407 I gave you a glimpse of my plan of hill culture for strawberries. Well, in order to test all the different varieties worked in this way we have to put in one or more rows of all the kinds we could get hold of; and I am watching with very much interest the behavior of the different plants, with runners kept off, and constant cultivation in spring as well as fall. Well, yesterday, after speaking of the Nick Ohmer's earliness, I went up through that hill-culture patch to see how the others were behaving. All at once I was startled by seeing a great big strawberry, ripened all over, then another and another, until I noticed there were six rows of berries with quite a good many ripe ones right out in the open field. Now, there were a few other kinds that had begun to turn just a little, but nothing like the six rows. What were they? Why, as sure as you live it was our old friend *Rio*. Michel's Early was near by in another patch in a *matted* row, but there was not one berry colored in the lot. The Earliest and Darling had just begun to color, but they were planted rather later than the Rio in the same patch. I really do not know why the Rio should be ahead of every thing else in hill culture, unless such constant stirring of the ground suited the Rio better than it did any of the other kinds. That is not quite it either, for the other kinds are making most tremendous growths of foliage and runners. Yes, the greater part of them are putting out runners, even before the fruit has colored. But this constant cultivation seems to have hurried the Rio forward, and did not the others — not even the Earliest and Darling. The Rios are great strong thrifty plants, with stout runners already out, besides a very fair crop of fruit it is going to bear. Now, this thing illustrates a point: Under a special system of cultivation the Rio is the earliest good-sized berry we know of. And by the way, friends, there is going to be an enormous crop of berries on that little plantation put out last fall. They were all potted plants, however; or if not potted they were set out with our new strawberry-transplanter that I have described and illustrated; and this experiment demonstrates one thing to my satisfaction: With the right kind of culture you can grow an enormous crop of berries from potted plants *in only nine or ten months after they occupy the ground.*

DAMAGE TO THE FLORIDA ORANGE CROP DURING THE PAST WINTER.

The freezes of the past winter hurt us a good deal worse than at first appeared. Since I wrote you we have had cold that cut off the bloom of orange-trees, and reduced the crop to one-fourth what was expected. We now propose to adopt methods that will make us absolutely secure against injury to our groves from cold, and thereby make orange-growing more profitable than ever before. W. S. HART.

Hawks Park, Fla., May 10.

Friend Hart, we are very sorry for your losses by frost; but I am greatly interested in the method you propose, to get ahead of the frost. You may remember that I saw a grape-fruit tree that once bore a crop that sold for $50 as it stood on the tree. Now, a half, a fourth, or even a tenth of that amount would pay for some sort of protection of canvas that would render a tree safe for a whole winter or several winters. If it were not for the fact that you people have orange-trees of such tremendous height and breadth of expanse we might talk of a high fence with a canvas covering to the whole orchard. Has any one yet ever ventured on such an experiment? The cloth can be rolled up and unrolled according to the plan given in our book on tomatoes, with comparatively little expense, even if it covered a whole acre of trees; and then how happy the proud owner would feel (under that canopy) during a frosty night! You see he would have nice fruit when everybody else was short, and this would help to pay the expense of his plant.

Mr. Root, if you want to raise celery come to Florida. A gentleman in Hawthorn planted a plot of ground 60x200 feet, and shipped two solid carloads of celery from the same, netting at the rate of $4000 per acre.

Mannville, Fla., May 19. M. W. SHEPHERD.

That is right, friend S. Let us know what can be done in Florida. The gentleman probably had water unlimited, and some excellent brand of fertilizer, with perhaps good ground to start with. I wish you could tell us more about it, and especially what sort of manure was used. I would travel quite a piece to see such a block of celery.

THE FARMERS' HANDY WAGON.

We have now in use one of the wagons pictured on page 319 in our April 15th issue; and I am glad to say that it is proving to be extremely handy. We are beginning to appreciate all the points mentioned in the letters on the page referred to above, and your humble servant appreciates the bicycle-path it makes wherever it goes on the highway or around on our own private grounds. When our big team broke off the tongue (which was made of a piece of cross-grained timber) there was quite a murmur while we were obliged to let the wagon lie still two days because our wood-working people could not stop to put in a new tongue made of good hard straight-grained timber. I would advise the manufacturers to hunt up some nice sticks on purpose for wagon-tongues, even if they do sell the whole thing at a low price. See advertisement in another column.

Donations for the Shawneetown Sufferer.

Please send $1.00 to Thos. McDonald and charge to my account. R. Wilkin.
Newhall, Cal , May 12.

I send 25 cts. for Mr. Thos. McDonald, Shawneetown, Ill. I can send him lots of queens. If he can get bees near home, by the use of laying queens he can increase very fast. L. L. Skaggs.
Click, Tex., May 10.

Mr. A. I. Root:—I desire to express my appreciation of Gleanings. I am not up in the bee-line. therefore I speak only of the editorial part, and particularly of the April number, in which you quote Luke 6:38. I thank you for the article, which is really a good spiritual breakfast on a suburban train. I do not understand that your appeal for Thos. McDonald, of the Shawneetown disaster, is extended only to bee-people; therefore I hand you herewith one dollar for him.
Chicago, Ill., April 22. L. H. Nelson.

KIND WORDS FROM OUR CUSTOMERS.

I think Gleanings improves with age. There is quite a difference since I began first to take it, nearly 20 years ago. Jas Storer.
Lindsay, Ont., Feb. 28.

All the garden seed I got of you last year did finely, especially the cauliflower—199 heads out of 200 plants set. F. P. Clark.
Parkman. O , Feb. 10.

Gleanings is a visitor at my house every two weeks. I have not missed a number in seven or eight years. It is the best journal I take.
Rhinelander, Wis., July 13. Chas Brooks.

I am very glad that you received my order and gave it such prompt attention. The goods came in good shape. Foundation and sections are very nice. I am well pleased. My bees are all strong this spring.
Defiance, Ohio, May 5. Wesley Kencig.

The sections are very nice, and the wax is all one can expect it to be. Please accept my thanks for your promptness, and the nice goods you sent me. You saved me quite a speck in shipping the goods by freight. W. Z. Ferguson.
Pleasant Ridge, N. C., May 3.

Please allow me to express my thanks for the finely illustrated circulars you printed for me. Persons who see them say that The A. I. Root Co. shall have their job work in the printing line hereafter.
Scio, O., Apr. 17. T. H. Cook, M. D.

I received your notice the 11th and the freight the 17th. It was in good condition, and exactly as I ordered; in fact, it was as satisfactory as if I had been at the factory myself. Your hives and equipments are as complete and perfect as any that I have seen anywhere, and I shall not hesitate to recommend them.
Oxen Hill, Md., Feb. 18. S. B. Cox.

Yours of the 22d, stating goods would be delayed from one to two weeks, is received. I will say it won't inconvenience me very much so long as I get A. I. Root's goods. I appreciate your difficulty in being behind with your orders, and will wait patiently till my turn. W. E. Dages.
Morris, Ill., April 26.

[We in turn appreciate most thoroughly the spirit of this letter.—Ed.]

Order 62,220 came in on the eve of the 18th. I set every thing up and painted it yesterday. I want to say that every thing checked out exactly. Thanks for your care and promptness. So accurately are the pieces cut, and so explicit are the directions, a wayfaring man though a fool need not have any trouble in putting things together. If I can drop a bug in my neighbor's ear in your favor, I will gladly do so, knowing that you will treat them *right*.
Palmy, Texas, Mar. 20. W. B. Barbee.

CIGARETTES, OPIUM, ETC.

I wish to say one thing about cigarettes and the opium contained in them—page 26. I am sorry to say that I for about five years used them, and think the opium is not in the tobacco itself, but in the paper that the cigarette is made with, so the smoker gets the opium just the same. I thank God, my good wife, and Mr. A. I Root, that they have caused me to give up the use of the weed. Will A. Shields.
Los Angeles, Cal., Apr. 25.

Inclosed please find $1.00 to pay for the 500 cards. They were O. K. We appreciate your interest in our church work in doing it with such promptness, and at such satisfactory prices. W. A. Leary.
Grafton, O., March 22.

[Perhaps I might say, by way of explanation, that we are doing quite a little work in the above line for pastors and Sunday-schools, etc. With the facilities we have, very likely our prices, postage included, are less than those given by ordinary local printers.]

Gleanings is surely worth many times its price for its safe guide and guard against so many cunning frauds and swindles that are getting so many dimes and dollars they ought not to have. I would *always* be a friend to Gleanings for this one thing if no other. By the way, I got caught on the electropoise hook, and lost just $8.00. It was really an injury to my health, and I wish you would say in Gleanings, that, if any one of its readers contemplates trying one of them, "Don't do it, *never*, whatever you do; have nothing to do with the concern." All they want is your money, and they will get it if you fool with them. James L. Arnold.
Cumberland, Miss., March 10.

Mr. A. I. Root:—I am not taking Gleanings for bee culture, as I am satisfied I am not on that line; but the Home-talk is worth that much to me and my family. If you are not a Christian, you are certainly the veriest hypocrite I ever read after. Excuse me for using such an expression, as I have so often been deceived that I hardly trust anybody until tested thoroughly. Many are called, but few are chosen. Of course, you indorse the sentiment expressed in the tract you copy in March 15 Gleanings, from A. F. Cowles; and, if you do, you do not visit the oath-bound lodges where I have heard the name of Jesus forbidden to be used. Every thing for Christ is *my* sentiment, whether I meet it or not. R. I. Evans.
Elberton, Wash., Mar. 24.

My good friend, you judge correctly. Like yourself I try to belong to Christ Jesus and to him only; and as he once said, "In secret have I done nothing," I never could see my way clear to uniting with any organization where a promise of secrecy is required. Since I have been trying to lead a Christian life I have had no secrets, and nothing to conceal.

Reading Gleanings with the "A B C" has interested me greatly in the "Home of the Honey-bees" and all the Roots, especially the father and grandfather, Mr. A. I. Root.

By the way, why are all bee keepers Christians? I gather from their writings they are. All dentists are not.

One question, please: My bees build hexagonal cells on round brood foundation. Do they all do that? I am a novice at bee-keeping, also at typewriting, which you will readily perceive. H. W. Ewing.
Iola, Kan., May 9.

[Perhaps I should explain that our friend who writes the above is a dentist. I suppose, Bro. E., bee-keepers are not all professing Christians by a considerable number; but I do hope—nay, I believe—that by far the greater part of them are Christians in all their dealings and in all their intercourse with their fellow-men. Perhaps one reason for the impression you have received in regard to bee-keepers is that our bee-journals as a rule have taken a decided stand for the kingdom of God and his righteousness.

Bees will always build hexagonal cells, even though the basis of their work be laid out in circles. In my early experiments on foundation I drove some small round-headed tacks into a board, just the right distance apart for the cells of the honey-comb. Sheets of wax pressed between two such boards were readily worked out by the bees into beautiful-looking honey-comb.—A. I. R.]

Don't Buy Supplies

For 1898 until you see my 38th Annual catalogue. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

The A. I. Root Co.'s Goods, at their Prices.

Parties desiring these goods can get them of me, and **save freight charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page Illustrated Catalogue free. Address

W. W. CARY, Lyonsville P.O.,
Colrain, Mass.

In writing advertisers, mention GLEANINGS.

"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

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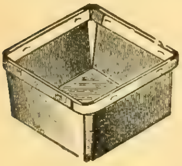
Fruit Packages of All kinds,

ALSO



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Order your supplies now before the busy season catches you. Price list free. Address

BERLIN FRUIT-BOX CO.,
Berlin Heights, Erie Co., Ohio.

In writing, mention GLEANINGS.

QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.
W. H. LAWS, Lavaca. Seb. Co., Ark.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS. Lisbon, Texas.

ROOT'S GOODS

Shipped from Jackson, Mich., at Root's prices. Send for list. W. D. SOPER, Box 565, Jackson, Mich.

Michigan Headquarters

for G. B. LEWIS CO.'S SUPPLIES, DADANT'S FOUNDATION, every thing needed in the apiary. Send for price list to

L. C. Woodman, Grand Rapids, Mich.

50c. QUEENS. 50c.

Six for $2.75, or $5.00 per dozen. Warranted pure.

GEO. W. COOK, = Spring Hill, Kan.

ITALIAN QUEENS.

Virgin 3-banded, 40c each; 3 for $1.00.

Gardiner L. Ellis, = = Millsboro, Del.

FOOD VALUE OF HONEY.
WHY IT SHOULD BE EATEN
WE ARE THE BUSY BEES THAT GATHER HONEY FOR THE FRISBEES
LAWN HIVE
SECTIONS
HONEY-COOKING RECIPES
NOVICE HONEY EXTRACTOR

Wanted, all the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa Clover Honey Cough-drops and their 48-page illustrated honey-recipe book, "Food Value of Honey," with lithograph cover. All mailed for 10 cents in stamps.

R. K. & J. C. FRISBEE, Pub.,
Box 1014. Denver, Col.

Reference A. I. Root.

In writing, mention Gleanings.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted. Cash for beeswax.

M. H. HUNT,
Bell Branch, Mich.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. **"Practical Hints"** will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

Young, warranted, either three-band or golden queens, 75c; 6 for $3.75; doz., $7.25. Reared from select working colonies. Circular free.
J. B. CASE, Port Orange, Fla.

TO ONE AND ALL!

QUEENS, strictly five-band or Golden Beauties.
Untested, 50 cents. Tested, $1.00.

TERRAL BROS., Lampasas, Texas.

SPECIAL NOTICES BY BUSINESS MANAGER

BEESWAX ADVANCED AGAIN.

When we made the last advance in beeswax a month ago we thought it would go no higher this season, but we are compelled to record another advance of 2 cts. a pound for immediate shipment only. We are paying at present 30 cts. cash, 32 cts. trade, delivered here; but this price may be withdrawn at any time without notice. We have secured enough from dealers so that we are practically certain the price will go no higher, and by next issue we may announce a lower price because we look for a much lower price as soon as the season is over, when we use so much in making comb foundation.

ADVANCE IN COMB FOUNDATION.

Chas. Dadant & Son, Hamilton, Ill., with ourselves, announce the further advance in price of comb foundation of 2 cents a pound, both wholesale and retail. The revised price list will now stand as follows:

	—In lots of—			
	1 lb.	10	25	50
Medium brood	50	48	46	45
Light "	52	50	48	47
Thin super	57	55	53	52
Extra thin	60	58	56	55

The market price of beeswax is very firm, and advancing; but we do not anticipate that a further advance will be necessary this season.

SECTION HONEY-BOXES.

We still have a surplus ahead of orders of 4¼x7-to-foot No 1 and No. 2, which we can ship promptly; also of 4¼x1⅝ No. 1 and No. 2. Of the three styles of plain sections, No. 2 grade 4x5x1⅜; 3⅝x5x1½ and 4¼x1½, we have a small surplus. Any of the above we can ship promptly while they last, and when not ordered with something else which will delay them. Orders for sections of other sizes, and for foundation, are from one to three weeks behind. The lumber we are now using to make sections costs us enough more than our regular supply, which is exhausted, to add to the cost of a thousand sections 30 to 50 cents. We have decided not to raise the price any on small lots for this season, but have advanced the price to large dealers in lots of 50,000 and upward.

GLOBE BEE-VEILS.

We are able to announce that we are again supplied with Globe bee-veils in sufficient quantities to fill all orders. When we started into this season we thought we had plenty to last through the whole season, and would have had under ordinary circumstances. A new outlet developed in trade for the Klondike, and our supply very soon vanished, and we have been entirely out for six weeks or over. It took time to find a place to get the frames made and prepare tools and stock for turning them out. Our new supply has a new and improved method of attaching the ribs to the neck-band, for which application has been made for patent. It was devised by the party in Massachusetts who makes the frames, but is assigned to The A. I. Root Co. These veils would be a source of great comfort to our soldier boys many times, in places infested with flies and mosquitos. They seem to be appreciated by bee-keepers, although we personally prefer the veil without the steel frame, to be worn over a broad-brimmed hat.

CARLOAD SHIPMENTS

During the month of May we have shipped from here fifteen full carload shipments, besides about twice as many goods in less than carload shipments. These cars were as follows: One to Jos. Nysewander, DesMoines, Iowa; one to Reno, Nev.; four cars for export, two going to Liverpool, Eng., and two to Sydney, Australia; one car to Rocky Ford, Colorado; one to Buell Lamberson, Portland, Ore.; one to Salt Lake City, Utah, care of John H. Back, 235 W. 3d N. St.; two carloads to Salisbury, and two to Wm. Selser, at No. 10 Vine St., Philadelphia; one to Walter S. Pouder, Indianapolis, and one to Vickery Bros., Evansville, Ind. We have orders entered for fifteen cars more for shipment this month. The first of these will be a car to Jno. Nebel & Son, High Hill, Mo.; one to Jos. Nysewander, Des Moines, Iowa; one to Chicago branch and St. Paul branch, and one to L. A. Watkins Mdse. Co., Denver, Col. We have shipped, up to June 1, this season, sixty-eight full carload shipments, while up to same date last year we had shipped forty-four full carloads. The increase in less than carload shipments this year over last has been nearly double.

THE SITUATION AT PRESENT.

The following is a copy of what we are now sending out as a receipt for most orders for bee-keepers' supplies:

"We are sorry to be obliged to inform you that we are so far behind our orders because of an enormously increased demand that it will be impossible for us to ship your goods for from three to four weeks. We are filling orders in their turn as they reach us, as far as possible, believing that, under the circumstances, this is the only fair way. We have been running the factory day and night since March 1st, working a force of about 250 people (all we can make room for). We are turning out 500 to 600 hives, 80,000 to 100,000 sections, and 1000 lbs. of foundation every day, and other goods in like proportion. Shipments aggregate 1½ to 2 carloads in weight every day. We have bought 10 carloads of two other factories to help us keep pace with our orders but all the other factories are behind as well as we: and, from all the data we can gather, the demand for bee-keepers' supplies seems to be double that of any previous year. You may say we ought to have been better prepared; but reflect a little, and think what it means to provide for such an unexpected increase. If we were not shipping constantly we should, in less than a month's time, fill up all our available storage capacity, manufacturing at the present rate. Unless more bee-keepers and dealers are more forehanded, and order early in the fall and winter what they are likely to need, such times as we are having now can not well be avoided in such seasons as this by any amount of preparation by the manufacturers. We expect to put in a 500 horse power engine, and build an addition to our wood-working factory nearly twice the size of the present one, and will do our part in getting ready for another year; but that does not help us much for the present. If you can not wait your turn to have your order filled, let us know at once and we will cheerfully cancel it and return the money you have sent with it If we knew where to refer you, where you could get more prompt service, we would gladly do that; but (as far as we can learn) all factories are behind. Our branches and wholesale dealers are, as a rule, not so badly behind, but their stock is likely to be badly broken and depleted at this season when goods are being shipped so rapidly, and they might be out of the very thing you needed most. If you reply to this, please mention the date of this card so we may more easily locate your order among the 2000 or 3000 orders on hand. If you decide to wait your turn you need not write us. Avoid as much as possible making any additions to orders, or writing us to hurry them, because it is a big task to find an order among so many, and it may be the means of further delay. It greatly increases our work when, under the circumstances, you should do what you can to lighten it. We do not usually object to being bothered in this way, but in the present condition of things it is to your interest that we give this caution."

We have been using this for a week now, and it is having its effect in cutting down the orders, as many are asking to have their orders cancelled rather than wait so long, and orders are not coming in quite so freely as they were For the past few weeks we have been receiving about 1000 orders every 10 days. By the time we go to press again we hope to be able to report a better state of affairs. We are turning out four to five thousand hives a week now, and the orders entered aggregate eight to ten thousand. With the sections we are buying and those we make, we are disposing of over three millions a month; and our orders aggregate nearly two million. We are turning out 5000 to 6000 lbs. of foundation every week, and the orders foot up to about 10,000 lbs., so that we ought to be pretty well up on orders within two or three weeks, if we do not receive them as fast as they have been coming in, and if we have no mishaps. We wish to thank the many for their patience and forbearance under such trying circumstances. Not all are patient; but the great majority are, so far as we get an expression.

"Queens."

Gray Carniolans and Golden Italians. We are headquarters for above races.

Grade & Prices of Queens.	May & June	After July 1.
Untested queen	$ .75	$ .65
Tested queen	1.50	1.25
Select tested queen	2.50	2.25
Best imported queen	5.00	4.00

Write for prices on nuclei and full colony. Descriptive price list free.

F. A. Lockhart & Co., L. George, N. Y.

In writing to advertisers, mention GLEANINGS.

We are Headquarters for the Albino Bee. The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italians, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

In writing, mention GLEANINGS.

Italian Bees and Queens.

Queens, $1.00; bees by the pound, $1.00; nuclei, two-frame with queen, $2.00; one-frame, $1.50; full colonies, $5.00. Also fancy poultry.

MRS. A. A. SIMPSON, Swarts, Pa.

Second-hand Wheels Cheap.

ONE LADIES' COLUMBIA.

Nearly new; been in use comparatively little, and practically the same as the '98 models; 28-inch wheels; single-tube Columbia tires, reversible steel handle bars; weight 24 lbs.; $30.

ONE WHEEL.

Name-plate lost; gents'; maroon finish; Morgan & Wright quick-repair tires, in good order; weight 25 lbs.; price $20.

ONE NEW LADIES' AJAX.

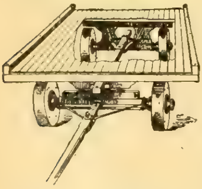
26-inch wheels, 1897 pattern, Morgan & Wright quick-repair tires, 63 gear, steel handle-bars, brake; $20.

ONE $150 REMINGTON TANDEM.

Gear 68 or 72; a fine machine, used but little; 1897 pattern; wood reversible handle-bars; Hartford single-tube tandem tires, practically as good as new. We offer this for an even $45.

THE A. I. ROOT CO., Medina, Ohio.

Low-down Broad-tire Farm Trucks



originated with us, and we still sell direct to farmers three fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddlers' wagons. Steel-wheel trucks, $18.

Farmers Handy Wagon Co., Saginaw, Mich.

In writing, mention Gleanings.

QUEENS. Untested, 70 cents, 3 for $2.00; after July 1st, 50 cents each. Tested queens, $1.00 each. Best Italian stock. Satisfaction guaranteed by return mail.

Theodore Bender, Canton, Ohio

QUEENS! Either 3 or 5 banded, 75c; 6 for $4.25. Will please you.

Chas. H. Thies, = Steeleville, Ill.

I. J. STRINGHAM,

105 PARK PLACE,

NEW YORK,

keeps in stock a full line of popular

APIARIAN SUPPLIES,

which are first-quality, both in material and workmanship.

Celebrated Wisconsin Basswood Sections, Dadants' Foundation.

ITALIAN QUEENS, 75 cts. Full Colonies and Nuclei.

In writing, mention GLEANINGS.

QUEENS

Untested, 50c; doz., $6.00.
Warranted, 60c; doz., $7.00
Tested, 75c; doz., $8.00.

Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.

CLEVELAND BROS., Stamper, Miss.

In writing advertisers, mention GLEANINGS.

Prosperity

It is here, and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,

FREMONT, = = = = = MICHIGAN.

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FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by

Emerson T. Abbott, St. Joseph, Mo.

Write for *free sample copy now.*

QUEENS. **Superior Italian.** From best golden and imported. Untested, 70 cts. each; six for $4.00. Select tested, $1.00 each. Fine breeding queens, $2.50 each.

E. A. SEELEY, Bloomer, Ark.

P. O. M. O. office, Lavaca, Ark.

Send for Catalog.

15 Barred Plymouth Rock eggs, 50 cts. Golden Italian queens and bee-keepers' supplies cheap.

J. F. Michael, Greenville, Ohio.

WHITE and Bl'k Minorcas; pure bred; best strains. Eggs $1 per 15. Sarah Shaw, Winthrop, N. Y.

Wants and Exchange Department.

WANTED.—To buy one or two hundred colonies of bees in Southwest Texas.
E. SANDFORD, Nokomis, Ill.

WANTED.—To exchange two pairs young gray squirrels, nearly grown, for repeating or single-shot rifle, shotgun, or offers.
W. V. BICKERD, W. Monterey, Clarion Co., Pa.

Ours is the Most Complete Department Nursery in the U. S. Can supply all your wants from **Flower and Vegetable Seeds** to **Street Trees** at low rates. We publish one of the leading Seed, Plant and Tree Catalogues issued, which will be mailed **free.** Send for it now, it will save you money. Try us, can refer you to customers in every state and territory in the Union. Forty-three years of square dealing has made us patrons and friends far and near. Have hundreds of carloads of

FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, PLANTS.

We send by **mail postpaid, Seeds, Bulbs, Plants, Roses, Small Trees, Etc.** Safe arrival and satisfaction guaranteed; larger by express or freight. 44th year. 32 greenhouses. 1000 acres.

THE STORRS & HARRISON CO., Box 556, Painesville, O.

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BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

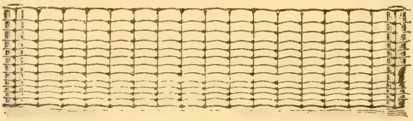
In writing advertisers, please mention Gleanings.

Don't Monkey with Cross Bees.

Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Tested, in May, $1.25; untested, 75c; 3 or more at $1 and 65c each. Send for 40-page catalog, information to beginners, etc., free.

A. I. ROOT CO.'S GOODS KEPT IN STOCK.

JNO. NEBEL & SON, HIGH HILL, MO.



The Dogs of War

let loose will increase the need to farm carefully to "make ends meet." Good fences save temper, time, stock and crops. See our ad. in next issue.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

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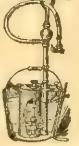
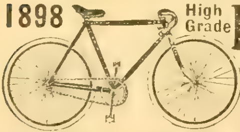
SPRAYING with our new **KEROSENE Sprayers** is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.

West'n Ag'ts, Henion & Hubbell, Chicago.



1898 High Grade BICYCLES



for Men, Women, Girls & Boys. Complete line. *All brand new models.*

$75 'Oakwood' for $32.50
$60 'Arlington' " $24.50
Others at $15, $17 and $20
Juveniles $7.00 to $12.50

No Money in Advance. WRITE TODAY for SPECIAL OFFER. Shipped anywhere C.O.D. with privilege to examine. Buy direct from manufacturers, save agents & dealers profits. Large Illus. Catalogue Free. **CASH BUYERS' UNION, 162 W. VanBuren Street, B-345, Chicago, Ills.**

In writing, mention Gleanings.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.

In writing advertisers, mention GLEANINGS.

Dollar Eggs? Yes, after June 1st we will sell all eggs at half price, $1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmas, Langshans, White Wyandottes. Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

Headquarters for Poultry Supplies.

Send for our book, "Everything for the Poultry Yard," (14th annual edition); eighty 6x9 pages; finely illustrated; full of information; you want it; it's free. Address

Geo. J Nissly, Saline, Mich.

Established 15 years.

In writing, mention Gleanings.

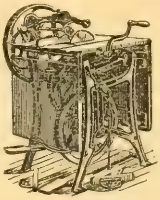
J. ROSEN KRATZ,

Breeder of Belgium Hares, Homing Pigeons, and Dutches Pigeons.

HATFIELD, PENNSYLVANIA.

QUEENS. Untested, either 3 or 5 banded, 75c each. My bees are as good as any in this country.

DANIEL WURTH, Falmouth, Rush Co., Ind.



One Man with the UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei

Seneca Falls Mfg. Co., 44 Water St., Seneca Falls, N. Y.

In writing, mention GLEANINGS.

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Honey Column.

CITY MARKETS.

CHICAGO.—We are not handling very much honey in this market just now, and the prices are without change from those of May. Beeswax is scarce, and sells at 30c. R. A. BURNETT & CO.,
June 19. 163 South Water St., Chicago, Ill.

PHILADELPHIA. — Very little comb honey in this market; some small lots held by retailers; not enough to fix price. Extracted amber, 4¾; white, 6; beeswax, 30c. We are producers of honey, but do not sell on commission. WM. A. SELSER,
June 10. 10 Vine St., Philadelphia, Pa.

MILWAUKEE.—The demand continues very good for honey, and as it is going out now the stock will be well closed out during next month. Our market has been fairly sustained, and prices have been maintained on all grades. Although sometimes shippers think sales are slow we find the results are much more satisfactory than slaughter values for the sake of quick sales. We now quote fancy 1-lb. sections 11@12; A No. 1, 10½@11; No. 1, 9@10; No 2, 8@8½; amber and dark and old, 6@7; extracted white, in barrels and kegs, 5½@6; dark, in barrels and kegs, 4@5; beeswax, 25@28.
A. V. BISHOP & CO.,
June 11. Milwaukee, Wis.

BOSTON.—At the present time the demand for both comb and extracted honey is very light, with but little stock on hand. We quote our market: Fancy white, in cartons, 13; A No. 1 white, in glass-front cases, 11@12; No. 1 white, in glass-front cases, 10@11; No. 2 white, in glass-front cases, 8@9; extracted white, 6@7; light amber, 5@6; beeswax, prime, good demand, and light supply, will bring 30.
June 9. BLAKE, SCOTT & LEE, Boston, Mass.

DETROIT.—There is no honey to quote. New crop will soon be offered in this market. Beeswax in good demand at 28@30. M. H. HUNT,
June 11. Bell Branch, Mich.

DENVER.—Our honey market is improving all the time on our brand of honey. We are selling the best grade of comb honey put up in our cartons at 12½c. Merchants are learning the advantage of having comb honey put up in this way, and it is increasing our sales very much. We handle and put up only the best grade in our cartons. The demand for white extracted is increasing all the time. We are putting it up in style jars that will sell. Can quote prices in quantity at 6c for best grade of white. Could handle a quantity of beeswax at 28c for choice yellow.
R. K. & J. C. FRISBEE,
June 10. Lock Box 1014, Denver, Col.

MINNEAPOLIS.—Demand only fair with sufficient receipts, with exception of fancy white-clover comb and extracted. Both could be placed in this market now to good advantage. Fancy white-clover comb, 10@11; amber, 9@9½; dark not desired unless strictly fancy, and then slow mover at about 8; fancy extracted white clover, 6. S. H. HALL & CO.,
June 9. Minneapolis, Minn.

CLEVELAND.—We quote our honey market as follows: Fancy white, 12@12½; No. 1 white, 11; No. 1 amber, 9@10; buckwheat, 8; white extracted, 6; amber, 4@5. A. B. WILLIAMS & CO.,
June 8. 80-82 Broadway, Cleveland, Ohio.

CHICAGO.—Quotations for comb honey are nominal, with trading light: Fancy white, 11c; No. 1, 10c; No. 2, and amber, 7@9; water-white extracted, 5½@6c; light amber, 4½@5c; dark, 4@4½; beeswax, 28@30c. Some Southern extracted is being offered, and would sell well for the next few weeks.
AMERICAN BROKERAGE CO.,
June 13. Chicago, Ill.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00; select tested breeder, $2.00; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

QUEENS Untested, 50c; doz., $6.00. Warranted, 60c; doz., $7.00. Tested, 75c; doz., $8.00.

Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.

CLEVELAND BROS., Stamper, Miss.

In writing advertisers, mention GLEANINGS.

QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.

W. H. LAWS, Lavaca, Seb. Co., Ark.

Italian Bees and Queens.

Queens, $1.00; bees by the pound, $1.00; nuclei, two-frame with queen, $2.00; one-frame, $1.50; full colonies, $5.00. Also fancy poultry.

MRS. A. A. SIMPSON, Swarts, Pa,

I. J. STRINGHAM,

105 PARK PLACE,

NEW YORK,

keeps in stock a full line of popular

APIARIAN SUPPLIES,

which are first-quality, both in material and workmanship.

Celebrated Wisconsin Basswood Sections, Dadants' Foundation.

ITALIAN QUEENS, 75 cts. Full Colonies and Nuclei.

In writing, mention GLEANINGS.

TESTED QUEENS.

Three or five bands now ready to mail at 75 cents each. None better. No untested queens for sale.

M. D. ANDES, Bristol, Tenn.

TWO SPECIAL OFFERS.

As explained in former ads., publishers can afford to put forth extra efforts in securing *new* subscribers, as the majority remain, once they become subscribers to a *good* journal. It is from this point of view that I make the following offers :

OFFER NO. 1.

To any one not a subscriber to the Review who will send me $3.00 I will send the Review 1 year, and 1000 strictly first-class snow-white one-piece sections. After accepting this offer, if any one wishes to buy more sections I will furnish them at the following prices: 1000 for $2.75; 2000 for $5.25; 3000 for $7.50; 5000 for $12.00. Sections will be shipped from any of the following points : Flint, Mich.; Chicago, Ill.; Medina, Ohio; Jamestown, N. Y.; Higginsville, Mo., or Omaha, Neb.

OFFER NO. 2.

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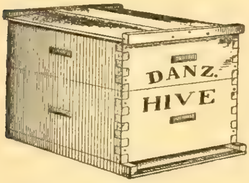
W. Z. HUTCHINSON, Flint, Mich.



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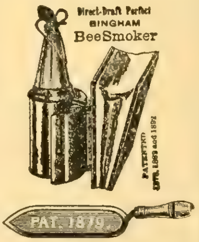

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VOL. XXVI. JUNE 15, 1898. NO. 12.

STRAY STRAWS FROM DR. C. C. MILLER

BEESWAX from old combs will be much lighter if you first soak the combs several days, occasionally stirring and renewing the water.—*Le Rucher Belge.*

I CAN SING "God Save the Queen" more heartily than ever, after a visit from Mr. and Mrs. T. W. Cowan. They are delightful people, and, above all, they're *good.*

COUGH MEDICINE. Take a good pinch of sage, pour over it a pint of boiling water, let steep a few minutes, strain, add 3 tablespoonfuls honey, and drink hot throughout the day. *Le Rucher Belge.*

CONFLICTING ACCOUNTS raise the question whether it is not possible that some kinds of honey may be as ripe at 11 pounds to the gallon as other kinds at 12. [This is a very sensible supposition.—ED.]

I USE bottom starters ⅝ deep of the same kind as top starters, thin foundation. Possibly it might be better to have the bottom starters of a little heavier grade, but less than ⅝ would hardly be so well.

BLACK CLOTHING for bee-keepers is recommended in a late bee-journal. I'm sure I get fewer stings with white or light clothing. A black ribbon on a hat is a distinct point of attack if bees are at all cross.

IN GERMANY there are still some battles over the question of watering bees in winter. Herr Betz reports a colony wintering finely on *dry* sugar — a heavy blow for the waterers. I once tried watering in winter, but my bees were too stupid; they wouldn't drink.

YELLOW SAND and yellow bees in Cyprus, black general appearance and black bees in Africa, etc., p. 427. But how do you account for yellow bees getting yellower in this country? Yellow gold in Klondike and California, eh?

NORTH-POLE BEES. *Le Rucher Belge* says the explorer Ejrind Asrup found many bees in latitude 83° north. He thinks they may be at the north pole, as the remaining 7° would make no great change in flora. There's only three months' summer; but as the sun doesn't set in that time it's as good as six months here, and plants develop with astonishing rapidity and vigor, and the flora is of extreme richness.

THIS YEAR is spoken of as remarkable for fruit-bloom and swarming. Not in this region. While Medina bees were swarming, our bees were killing drones. Abundance of fruit-bloom, but not one day in three bees could work—so cold and wet we didn't let fire die down in sitting-room till June 2.

EXTRA COMBS of sealed honey are a bonanza in spring. Every one says so, but not one in ten has them. They don't have them, because they don't get ready for them *now.* I'm setting aside a certain number of colonies for that special work. [We laid by last fall, as we always do, a large stock of sealed combs of honey. It was very convenient to pull on this stock this spring and early summer when bees ran short of stores.—ED.]

HASTY is above the average when he eats 12 oz. honey daily; but you're just as much the other way, Mr. Editor, when you put the maximum at 12 oz. weekly. A *properly* reared child of 8 ought to beat it. [If Hasty has gone to one extreme and I the other, I would wager Hasty some of our best fence honey that my dose would be more conducive to longevity in general than his dose. Too much sweet, for me at least, makes trouble.—ED.]

IF YOUR GIRLS make such slow work filling a T super, Mr. Editor, I'll venture the guess they don't use a filling-board, but just set the sections on a flat surface. If that's the case I think I'll agree to fill two to your one if you'll allow me the filling-board, neither of us to put in separators. [If you will come out here this summer we will arrange for a contest between you and the girls. It is presumed, however, that you will come out ahead, for you practice and work with nothing but T supers, while our girls fill section-holders, T supers, Ideal supers, wide frames, and every thing of the sort.—ED.]

LOTS OF PUZZLES about that two-story business. Only once have I succeeded in getting as much comb honey when two stories were left for the season. That one time, the only super I had filled in three apiaries was by a two-story colony. [It is possible that locality has something to do with this whole question; but I would explain that it is not our practice to leave the second story on a comb-honey hive the whole season. After the colony that has two stories gets to be rousting strong, the extra story may be taken away and given to a colony run for extracted honey, and its place is supplied with two comb-honey supers containing full sheets of foundation.—ED.]

MENTION has been made of plain sections used without separators, simply placed at the right distance apart. Now the question is, what gauges them at the right distance, and what holds them there? [No definite device, T super, or section-holder has been arranged as yet to hold plain sections without fences; but stops can be put on the section-holder bottoms at certain positions in such a way as to separate and hold at equal distances the plain sections. Stops might be arranged in the T super, but not so easily. If plain sections are used in wide frames, then all that is necessary would be to space them so that the sections would be at the required distances apart.—ED.]

MR. EDITOR, I see you think of raising at four corners, and at bottom of p. 431 you speak of "60 inches square of space." Don't you think that would be overdoing it just a little? Let's see; that would be 25 square feet, hoisting the hive in the air about 5 feet! Rather topply. Better give 60 square inches a fair trial first. [Ah! I see my mental gear-wheels must have slipped a cog. When I used the words "60 inches square" I meant 60 square inches. Doctor, you might have saved me all this humiliation by taking me for what I meant and not what I said. To get even with you I am going to say you did the same thing once, you remember, by speaking of so many "decimeters square" instead of "square decimeters."—ED.]

HADN'T THE COLONY got into the craze for swarming *before* they had the extra room? is asked, p. 422. I'm sorry to say no. Empty story was under before they dreamed of swarming. Possibly they swarmed rather than cross the space between the two stories. Right in this connection you speak of scattering brood in two stories, but I can't make out whether you gave the second story at the time of thus scattering brood, or whether it was already there. Please tell us how that was. [I believe that your suggestion, that the bees swarmed rather than cross the space between the two stories, is a reasonable explanation. In speaking of scattering or spreading the brood in two stories, if I did not say so I meant that I did so at the time of giving the bees extra room.—ED.]

LAST YEAR the first swarm I had (June 3) was from a powerful colony that had stood all winter in two stories. The only entrance was at the bottom. When each story had an entrance, I think I never knew a colony to swarm after getting fairly to work in more than one story. [The plan of having multiple entrances has been rather ridiculed by the bee-keeping fraternity; but I am not so sure that the principle is so utterly wrong in theory or practice. Giving more than one entrance at two different points of the hive, perhaps amounts to the same thing as to give one large entrance at the bottom of the hive. Julius Hoffman, the Hoffman-frame man, who operates hundreds of colonies and makes money off his bees, uses an entrance to each story of his hives. One thing I feel quite thoroughly convinced of; and that is, that the fraternity will in time recognize the value either of a large entrance or one or more small ones. This clustering out can and must be avoided. —ED.]

"IS NOT VENTILATION preferable to dead hot air" in a hive-cover? — footnote, page 422. Probably yes, in hot weather; but it's quite important to have a warm cover in cold weather. The dead air is *almost* as good as a ventilated cover in hot weather, and away ahead in cold. A *good* cover ready made should be put on the market for those who feel they must have it and are willing to pay for it. Lately it leaks out that Doolittle has tin covers, and I'm afraid you can't have a good cover without tin. [At one of our warehouse buildings the top floor is a large room. When the windows are shut down, and all the openings closed, and the temperature outside 80 to 100 in the shade it is unbearable in the said room; but when the windows are raised, and a breeze circulates through, it is very comfortable. But perhaps you may argue that a breeze does not change actual temperature. I think it does in this case, because the outside moving air is cooler than the air confined next to the roof above. Take another illustration: You are probably familiar with the ventilating-thimbles that go around the stovepipe when the same passes from a lower to an upper room. You will remember that the flanges separating the outer and inner walls of the thimble are perforated with holes. The object of this is to let the heated air escape so that the cooler air from the room can take its place. I think the same principle holds good in hive-covers.—ED.]

GENERAL CORRESPONDENCE

PREVENTION OF SWARMING.

A Scheme for Curtailing the Breeding Capacity of the Queen by means of Perforated Zinc.

BY B. F. AVERILL.

A great desideratum of the modern bee-keeper is, especially with those largely interested in this pursuit, a way to control the swarming impulse without detriment to the systematic industrial energies of his bees. To cope successfully with the problem would enable the apiarist to extend largely his operations, and increase the number of out-apiaries under the management of any given force of employees. A great deal of study has been given toward devising non-swarming methods that would attain that uniformity of result desired. If the apiarist is behind with his affairs at the commencement of the swarming season, and there are indications that many swarms are liable to issue before other means can be adopted, the most favorable plan, if swarms are not wanted, is to run rapidly over the apiary and reduce the strength of each colony making preparations to swarm, until arrangements can be perfected to make the control of the situation complete. In nearly all instances where swarming occurs, the conditions are comparatively the same. That is, where a natural increase of colonies takes place during the swarming season, swarms rarely issue unless the parent colony is in a normal condition preparatory to the event. Any supervision which decides the necessity of manipulation, to disarrange their order of proceedings, can easily be the cause of a delay of their intentions.

Previous to swarming preparations there seems to be a comparison between the cubic capacity of hive they occupy and the numerical force of workers, as age and habit accustom them to the different hive duties with which they naturally choose to be employed. Any plan of management which disrupts the autonomous order of hive government may temporarily or permanently moderate the swarming propensity, in favor of foraging and a surplus of stores. Confinement of the queen reduces the labors of the nursing bees, and makes available for comb-building and the sealing of stores a force of workers that would not undertake those duties nearly so soon under normal conditions. This force relieves those who are comb-builders, and allows them to seek the fields and flowers much earlier than bees of comb-building age generally forage; and the result is, as is often perceived, an immediate and consequential gain in the amount of honey gathered by a colony under these conditions. My plan enables me to achieve this result, and not entail upon the colony the disadvantage of an excessive restriction of brood-rearing, and consequently forcing a colony to labor under conditions that are not so profitable, ultimately, as the condition under which they would upon the plan I now describe:

When the swarming season approaches, and a colony is indicating its intention to swarm, divide the brood-nest, to each of the two portions giving a selected number of the combs of brood. The combs to be selected, and the proportions of brood in different stages of development to be given the division which retains the queen, must be determined according to the future conduct of operations; also, whether the queen is to occupy the compartment with the entrance, or be relegated to confinement in the rear of the hive, provided against exit to the swarm, should a swarm possibly come forth. When division is made, a perforated zinc division-board is placed in the center of the hive, and perforated zinc strips on top of the frames given the queen. By thus reducing the brood produced by a colony to *just a few points* below the requisite numbers that would augment the swarming propensity, and, after the plan was practically understood, extending the method of management to all the colonies of an apiary, or a system of apiaries, the value of the same will to bee-keepers, I think, be readily perceived.

In working for extracted honey I judge it preferable to give the queen to the compartment with entrance; then the combs in the rear of the hive would be filled with honey, and could be extracted. In working for box honey, more stores would be carried to the supers if the queen occupied the rear of the hive. The principles of this will be apparent to the expert, and I hope some of my bee-keeping friends will experiment successfully along this line, and put the matter in a form that will be comprehensible to the novice.

I fear my explanations are not sufficiently explicit to render the practical adoption of the plan available to those lacking experience, though my first experiments, when testing the plan, were about as successful as those of the season of 1897. But I had thought out the principles involved as a result of many years' observation among the bees.

Howardsville, Va.

[The plan indicated in your next to the last paragraph is just the same as that recommended some years ago by a bee-keeper whose name I have now forgotten. Although it was talked about a good deal at the time, I do not remember that it really accomplished the object desired. My experience rather leads me to believe that, if the queen has been given unlimited room to breed, there is a lessening of the desire to swarm; but if that breeding room is at all curtailed, the swarming propensity is aggravated.—ED.]

BEE-KEEPING IN "MERRIE ENGLAND."

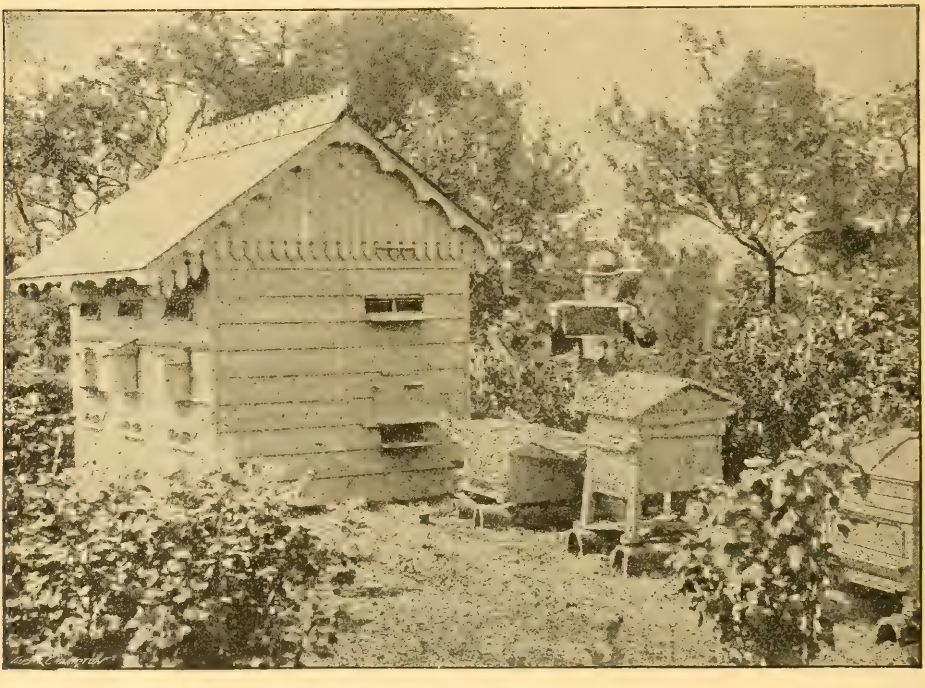
A Peep at One of the British Apiaries.

[Of late there have been running, in the *British Bee Journal*, views showing British bee-keeping as it is conducted in the mother country. While there are some things in common, both as to methods and hives, yet there are quite a number of things in which there are differences. The hive architecture —that is, the outside of it—is a little more elaborate than that of American hives. In the generality of cases the hives are mounted on legs standing up a foot or two from the ground, and within working distance of the apiarist. Then there are porticos, porches, and such like things that the American bee-keeper, who numbers his hives by the hundred, can not afford and perhaps would not tolerate.

It should be remembered that bee-keeping in Great Britain is not, as a general rule, conducted on as elaborate a scale as it is in this country. The cottager may have from one to a dozen colonies in his yard. While the apiaries are small, there are more of them—many more of them, perhaps—to the square mile, than in the United States.

The British Bee-keepers' Association, as well as the *Brit. Bee Journal*, encourages every one to keep a few bees. The cottager, with his limited income, is, sometimes, just able to make both ends meet, and hence finds the keeping of a few colonies both a pleasurable and profitable occupation. It gives him the best and most wholesome sweet in the world for his table, and enables him to have a little more of this world's goods than he perhaps otherwise would.

Personally I have been greatly interested in the pictures that have been presented in our esteemed British cotemporary from time to time. Feeling sure there were some views that would interest our own readers, I arranged for an exchange of engravings, and now take pleasure in presenting the first one of the series — the house-apiary, the hives, and the bee-keeper himself. The interesting and remarkable part regarding this is that the owner began to study bees when he was 82 years old, when most men would feel too feeble and perhaps too ancient to go into some new industry. May he reach and pass the four-score-and-ten mark. We little know how much an agreeable and pleasant pastime afforded by the study of bees will do sometimes to build up health and prolong life. —ED.]



APIARY OF WM. LISTER, MORTON, GAINSBOROUGH, ENGLAND.

Our illustration shows the apiary of a veteran bee-keeper, Mr. Wm. Lister, of Morton, Gainsborough. This gentleman may serve as an example to many of our younger bee-keepers, as well as to those who declare they are "too old" to take up bee-keeping. Always used to an active and busy life, an architect and surveyor by profession, he first began to take an interest in bee-keeping in 1888, when a friend lent him "Cheshire's Practical Bee-keeping." At this time, too, his next-door neighbor, the curate of the parish, commenced to keep bees. At this time Mr. Lister was eighty years of age; and in 1890, nothing daunted by his fourscore and two years, he determined to take up bee-keeping himself. He built himself a hive which was kept in the window of his workshop, with an entrance through the sash for the bees to fly from, and an alighting-board and porch outside. This modest beginning did not long satisfy his aspirations, and after building a hive or two he determined to erect a bee-house, and, with the exception of the asphalt floor, he actually made and erected the capital bee-house shown in our illustration. It measures 10 ft. by 6 ft., and is 6 ft. high to the eaves. The walls are double, with an air-space between, and the roof is matchboarded and felted as well as slated. Two sky-lights are fitted which open outward to allow bees to escape, and shutters are also affixed to darken the interior. Runners to carry single-walled body-boxes are fitted round one side and the end farthest from the door, and sixteen stocks can be thus accommodated in two tiers. On the opposite side of the house is a hinged table for manipulations, and the corner behind the door is fitted as a comb store for 100 frames.

A shelf or so accommodates sundry apparatus, and all carbolic acid and napthalene in stock is kept here. This will doubtless account for the entire absence of spiders, moths, etc., usually too plentiful in this class of house. Outside of the house the porches are painted various colors, and along one side runners are fixed which carry nucleus hives, so that they may be moved either toward the hive from which they were taken to strengthen them or toward the hive to which it is intended to introduce the new queen. The roof on this side projects 18 in., and so protects these from heavy rains. This bee-house cost in material $48, and since it was erected all additions by way of outside hives have been discontinued. Every appliance connected with the craft used in the apiary, except smoker and quilts, has been made by our venerable friend himself, even down to the metal ends and frames. The hives proper are constructed entirely upon a novel design of his own. They have the entrances at the top, with a passageway along the front of all the frames. Floor-boards are all loose with wedges under, and can be drawn out in an instant; and a ventilating-hole is bored at the back of the body-box toward the bottom, through which napthalene is introduced by sliding the perforated zinc on one side. No impervious quilts are used, yet floor-boards are always dry. The bees work well in the hives, and winter well; and the interest and occupation afforded in looking after his bees and ministering to their wants have brightened the eventide of his life and added to its enjoyments in no small degree, besides giving a zest for outdoor occupations marvelous in one who has already entered upon his eighty-eighth year.—*British Bee Journal.*

FACING APPLES AND HONEY.

A Practice Encouraged by the Dealer and Commission House rather than by the Producer.

BY W. S. FULTZ.

Editor Gleanings:—At the present time there is considerable controversy in GLEANINGS over Doolittle's assertion that it is not wrong to face honey, apples, and other things when put up for sale. Without going into the merits or demerits of the question, I should like some of those persons who are criticising Doolittle to tell us who is to blame for this habit of facing. Is it those who do the facing or is it those who handle the product and make sale of it? I have been in the fruit business for about 25 years, and I learned several years ago that the trade — yes, and consumers too — will buy the best-appearing packages of fruit; and the fruit that is faced with the nicest specimens always has the readiest sale at the best price.

When I first entered the fruit business I thought it was dishonest to face fruit that was offered for sale, and particularly so when selling in the home market; but I soon found that, if I wished to succeed, I must do as others did, for purchasers were inclined to take the appearance of the fruit to judge by, and that the eye was the only thing that it was necessary to please when a sale was to be made.

Last summer, apples were so plentiful here that they went begging at 15 cts. per bushel, and as I had over 400 bushels I knew that I should have to find a market somewhere else, or my apples would go to loss. I sent a trial shipment by steamboat to St. Paul, and realized 47 cents per bushel net. During the summer I sent 120 barrels to St. Paul, and they averaged me $1.20 per barrel net. All of those apples were faced with the nicest, and the only trouble was that I could not supply the demand that I had for apples. When I was sending my Dutchess apples, one of my neighbors asked me to allow him to put five barrels of the same kind of apples with mine. This I would not do, but I allowed him to ship his when I shipped mine, making two consignments. When the returns came I had $1.20 net per barrel, and was asked to send more. My neighbor had 40 cents net per barrel, and was told that his apples did not sell well because they were not faced. His apples were just as nice as mine. I got well paid for all my labor and trouble, and he nearly gave his apples away, just because they were not faced.

A few days later, when I was preparing my Wealthy apples for shipment, another neighbor brought ten barrels of Wealthy, and wanted to send with mine. I asked him if his apples were faced, and he said they were not. I told him of the former shipment, and advised him to repack and face them, but he thought that would not pay. So I advised him to get a commission merchant in town to send his apples, and he did so, his apples and mine going on the same boat. When the returns came I had $1.20 per barrel, and the other man had 30 cents per barrel, and was told to face his apples if he sent any more.

One of our dealers in Muscatine told me that he bought and shipped 6500 barrels of apples last fall, and that they faced them with selected apples, and that he had bought about 200 barrels from a farmer that were packed by the farmer in the orchard. When these 200 barrels reached their destination they were opened and found to be not faced, and were rejected. It cost the farmer $30 to have those apples repacked and properly faced.

As long as the public demands that honey, fruit, and other products shall be put up in attractive shape, and that appearance alone shall be the criterion to go by, packages will be put up that way. When the public demands that all products shall be properly sorted, and that only those of a certain grade shall go in the same package, then they will be put on the market that way. There is no intention of dishonesty in bee-keepers facing their honey, or of fruit-growers in facing their fruit. They do it because the trade demands it; and as soon as trade demands some other method, producers will cater to that demand.

Muscatine, Ia., May 20.

[Some of our friends may think it a little strange that I have allowed this discussion to be reopened since I said it must close in the previous issue of GLEANINGS; but as Doolittle received a shower of hot shot, and as there was almost no one to defend him, I think it no more than fair that I should print the foregoing, especially as I believe it explains who is responsible in the first place. In doing so I do not in any sense indorse the practice spoken of, whether by the producer or bee-keeper. In speaking of Doolittle, another correspondent, in a private letter, writes: "Doolittle, in an unguarded moment, made the statement that the horse was 16 feet high, and being afflicted, like the most of us, with a quality better known as stubbornness, still sticks to his original statement. Now, notwithstanding all this, I like him. He is not at all what his name indicates. If he has any thing to say, he says it; and if he has any thing to do, he does it. These are qualities that make up representative men. I should like to meet him, as well as the other prominent bee-keepers whom I know only through the bee-journals."—ED.]

* * *

ONE WAY OF UNCAPPING.

How the Operation is Performed in the Apiaries of one of the Most Extensive Bee-keepers in the World; the Nuisance of Staples and Other Metal Spacers on Frames during the Uncapping Operation.

BY HARRY S. HOWE.

Mr. Editor:—The task you have set for me is a rather hard one. It is very much easier to show how to uncap than to tell how, and showing does not always make it clear to the beginner.

It has fallen to my lot to try to teach several "greenhorns" to use the uncapping-knife. Some of them would "catch on" at once; others never did, nor do I think they ever would, even if they cut up all the comb in three counties.

When Mr. Coggshall and I work together he usually "takes off" while I uncap and extract — not so much because I can extract faster than he can, as it is because he can "take off" faster than I can. When I go out with a green hand, the object is to make his day's work bring the best returns. Working upon this theory it does not pay to have the green man uncap — at least not to any great extent.

There are few pieces of work among the bees where an expert will beat a beginner by a larger per cent than he will in uncapping, which seems to call for more of the "slight of hand" than the other work; yet the motion of using the knife, like the motion used to jerk the bees off the combs, once learned, seems so easy that one wonders why every one can not do as well at it. So much for the preamble; now for the machinery.

All of my honey-houses are arranged on the same plan as nearly as possible. This plan is arranged so that the work may be done with as few motions and as little work as possible. Some people seem to work just for the fun of it. I don't. Results are what pay the bills.

The filled frames in the carry-alls are placed on the stand, facing the operator. We will assume that the honey is all capped — that is, that all the combs have some capped honey in them, ranging from the outside combs with just a strip in the middle to combs that are capped all over. The operator picks up the first one by the top-bar, and places it on the rest to the capping-can. The frame is stood on one of the staples that are driven into the end of the bottom-bar, and grasped by the opposite end of the top-bar in such a way that it may be put in any position; and when one side is cut off it is whirled around the other side to, without having to be lifted.

Commencing at the bottom, the cappings are cut with a quick drawing or slightly sawing motion. About two sweeps lengthwise of the frame will usually clean a side. Then a slight twist whirls the comb around, ready for the other side. As the last cut is made, the comb is brought down to a horizontal position ready to go into the extractor. All of my extractors take the frames in a horizontal position. When the combs are uneven, of course it takes some extra digging with the point of the knife to clean them. After they have been through the extractor a few times they will be level. Where the combs are only partially capped, one sweep of the knife does it.

To cut nicely, give the knife a slight drawing motion, about as a barber uses a razor. Once in a while one strikes a batch that will not cut nicely; then smaller cuts and more of them are required.

After trying all kinds of capping-knives I have come to use only the Bingham, principally because they seem to stand better. To do good work the knife must be kept very sharp. I always use the knife cold, washing it off only once in a while to sharpen it on a fine-grained stone.

Wire staples for self-spacers and all that sort of thing cost more time in uncapping than they save in spacing, especially where only nine frames are used in a ten-frame super.

I uncap only as fast as the combs are extracted, and once in a while not so fast as the extractor could be run.

Uncapping is the most disagreeable part of bee-work to me, perhaps because it can not be rushed. When the combs are all capped I can not cut off the cappings as fast as a good man can take off or extract, and it does not pay to have two men stand and wait for one. As a result I have given considerable thought to rapid methods of uncapping. My last capping-can is a 14-qt. tin pail with a deep dishpan punched full of holes that will just go down into it. Across the top of the dishpan is a strip of wood three inches wide to rest the frame on while working. The whole outfit is put on a stand that brings it up just so a man can stand up to work.

There are several other styles of can that are equally good.

One thing to be considered is, how thick a shaving to take off. This depends upon the state of the honey. When it is cold, just taking off the capping seems to go pretty well. When it is very warm and the honey is thin, quite a slice of the top of the cells makes the best time. Practice alone will tell which is best, every time. The combs must be left level, any way.

As a parting warning I will say, don't lick off the honey-knife. There is a story current in Groton that Niver once did, with results that all who know him will never forget. So, *don't*.

Ithaca, N. Y.

[A short time ago a correspondent wished to tell me in detail just how Mr. Coggshall does his uncapping. As I knew that Mr. C. could tell it better than I, I referred the inquiry to him, requesting that he write it up for GLEANINGS. But it seems the latter again referred it to his right-hand man, Mr. Howe, a schoolteacher, who is more "used to writing for print." I would state, in addition, that a great deal of Mr. Coggshall's buckwheat honey is so very thick in the combs that it is thrown out of the extractor before the bees have time to cap all of it; at least, the combs that were taken out the day I visited one of his yards were, about 75 per cent of them, put into the extractor without uncapping, for, indeed, there was no uncapping to be done; and the honey—well, I should say it would run nearly 12 lbs. to the gallon. I believe Mr. Coggshall extracts the combs, not necessarily when they are all capped over, or largely so, but when the honey in them has reached the proper consistency, while at some seasons, and particularly in the case of honey from some sources, he finds it necessary to wait till the combs are capped. About those metal spacers and the uncapping-knife. Dr. Miller will please take notice of what Mr. Howe says.—ED.]

THE MOSQUITO-HAWK, AND THE HARM IT DOES TO BEES.

BY A. J. WRIGHT.

What may be strictly true in one locality may be strictly untrue in another. A knowledge of this fact, and a desire to prevent the wholesale slaughter of what I consider a very valuable insect, impels me to write the following:

An article with the above title appeared in March 15th GLEANINGS. I assume that the writer, in using the term "mosquito-hawk," referred to what is known among naturalists as the dragon-fly. I should feel badly indeed if I believed that the article in question should induce every bee-keeper who reads the same to kill on an average 100 dragon-flies per day for two months (a total of 6000), as the writer of said article avers he has done. Now, I do not wish to be understood as questioning in any way the truthfulness of the statements made in the article referred to, as I do not know what the heated atmosphere of Florida may be capable of producing in the way of dragon-flies; but during a long and pleasant acquaintance with this truly beautiful and interesting insect I have never known him to be guilty of any act detrimental to the interests of mankind.

My apiary and residence are but a few rods from the outlet of a small lake. This outlet widens into a marsh covering hundreds of acres, and produces annually thousands of dragon-flies and millions of their natural food, mosquitoes. I have seen the dragon-fly in all stages of development, from the egg to the adult insect. I have seen him as a larva clinging to the water-lily stalks; I have seen him as a pupa on the muddy bottom and among the eel-grass of the marsh; I have seen him later in this same pupa state upon a water-lily leaf going through a series of contortions to free himself from the outer skin, from which he emerges a very king of insects, clothed in purple and gold, with transparent silvery wings, dashing through the air so quickly as almost to elude the eye. I have watched him by the hour in the apiary among thousands of flying bees, and have never known him to interfere with them in any way; and I should require strong evidence to convince me that he ever eats a honey-bee, or, under the name of darning-needle, sews up the ears of naughty boys and girls. But here he comes; let us watch him for a time; possibly he may furnish the evidence to convict himself. He is now in the apiary, and seems to remain motionless in the air. He now makes a sudden dash, and you next see him darting downward over the strawberry-bed, and sad havoc he is making in that swarm of mosquitoes and gnats, darting rapidly back and forth; and now, joined by another of his kind, both literally fill their arms with the soft-bodied insects, and then retire to enjoy their well-earned supper. It is now after sunset, and the dragon-flies have greatly increased in number, while the swarm of mosquitoes and small flies has disappeared. What is the cause of that small cloud of dust, and that rustling noise over there among the grass? My bee-keeper friend, it is a bee-moth struggling in the grasp of a dragon-fly, and this is only one among hundreds that will perish in the same way before the setting of another sun.

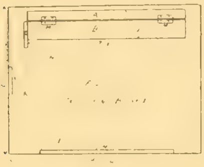
In conclusion, I do not believe the dragon-fly, or mosquito-hawk, of northern localities, is an enemy to bees; and I believe that earnest investigation will prove him a friend; and the object of this article will be attained if this beautiful insect is accorded a fair and impartial trial upon its merits.

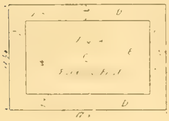
Bradford, N. Y.

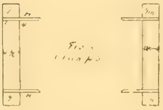
APPARATUS FOR FOLDING PAPER TRAYS FOR COMB-HONEY SHIPPING-CASES.

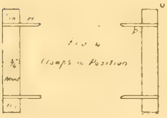
BY WM. MUTH-RASMUSSEN.

A few years ago I asked G. M. Doolittle if he knew of any better way of making the paper trays than by folding over a square-cornered board. I had then already invented and used the device described below; but I thought that he or some one else might know of something better. I had particularly in mind the folding of the corners of a common dripping-pan, supposing that it is done by some kind of press or stamp, but have never seen it. Mr. Doolittle answered in GLEANINGS that he knew of no other way than the old one which he has several times described.









Though my apparatus does not work very rapidly, it does the work quicker and more satisfactorily than a plain board; and as it may be of benefit to many who use the paper trays I will herewith describe it.

The apparatus consists of three parts; viz., the folding-board, Fig. 1; the folding-plate, Fig. 2; and two clamps, Fig. 3.

The folding-board is ⅞ in. thick, and about 16 in. wide and 20¾ in. long; cleated on the under side to prevent warping. (The dimensions here given are for 24-section shipping-cases.) A stick, ⅜x⅜x 3 in., is fastened on top of the board, and even with its edge, at K. Another stick, ⅜x⅜x14, is fastened in the same position at I. The gauge, A B, is made of two pieces, each ⅜ thick and 17⅛ long. A is 1 in. and B 2 in. wide. They are hinged together as shown at M M, in Fig. 1. Small tin hinges can be cut out of tin. Tobacco-boxes with hinged covers are inexpensive, and answer the purpose. They are fastened with ½-inch wire nails, clinched on the under side. A stick, ⅜x⅜x3, is nailed on the end of B, at C.

The folding-plate, Fig. 2, consists of a sheet of tin, D D, about 11⅜x17⅛, cut so that it will fit easily into a shipping-case. The edges and corners of the tin plate, as well as of the tin part of the clamps, should be smoothed off with a file to prevent them from cutting through the paper. A ⅜-in. board, E, 3½ in. smaller each way than the tin plate, is fastened to this with wire nails, clinched on the upper side of the board. This leaves the tin plate projecting 1¾ in. all around the edges of the board. A short piece of broomstick, for a handle, is fastened at L by a screw, inserted from the under side. A corresponding hole is cut in the tin, so that the screw may be tightened if it should get loose.

Each clamp, Fig. 3, is made of a strip of tin, F F, 1¾ in. wide and 11⅛ long, or ¼ shorter than the width of the folding-plate. A strip of wood, G, ⅜ thick, 1¾ wide, and not quite as long as the width of the board E, is fastened with wire nails to the tin strip, equidistant from both ends. On each end of this strip of wood is nailed a piece of section, ⅜ wide and 4 in. long, rounded at the inside corner of the projecting end, as shown at H, Fig. 3.

To begin with, place a sheet of paper, such as comes with the shipping-cases, on the folding-board, letting two adjoining edges rest against the stops I and K. Place the folding-plate on the paper, and adjust it so that the paper will project evenly all around the edges of the tin plate. Now lay the hinged gauge, A B, against the edge of the tin plate so that the further left-hand corner of the plate will fit snugly into the angle at N, Fig. 1. Fasten the strip A to the folding-board with 1-in. wire nails, and the apparatus is ready for use.

FOLDING.

Lay a sheet of paper, as before, on the folding-board, against the stops I and K. Drop the gauge B on the paper, and hold it down while you put the folding-plate in position, the edge of the plate resting against the gauge, and into the angle at N. Place a 10-lb. weight (I use a brick-shaped piece of iron set up on edge) on the folding-plate, to keep it from moving, and in doing so press firmly on the plate to prevent it from slipping while you put the weight on. As soon as the weight is in position, take hold of the corner-piece C and throw the gauge B back, letting it rest on A.

Now fold the two short edges of the paper (at your right and left hand) over the edges of the folding-plate, smoothing down the folds with the thumb-nails. As soon as folded, slip the clamps over the folded parts of the paper, letting the strips H H grasp the edges of the board E (that is nailed on the folding-plate), as shown in Fig. 4, where the folding-plate is indicated by dotted lines. In Fig. 4 it will also be seen that the clamps are ⅛ in. shorter at each end than the width of the folding-plate. This is in order that the clamps may not interfere with the folding of the long edges of the paper.

Now fold one of the long edges of the paper over the tin plate, smoothing it down as before. Raise the folded edge of the paper to a vertical position. At each end of this fold you will now have a kind of pocket formed by the long fold of the paper, and a little square piece projecting from under the end of the clamp. For the right-hand corner stick a finger of the left hand into this pocket and open it. Then press the short vertical corner fold down, so that it lies exactly over the long edge of the tin plate. With the thumbnail of the right hand make a diagonal fold, beginning at the corner and running toward the center of the folding-plate, as at O P, Fig. 4. This fold will be at an exact angle of 45° with the other folds. In making this diagonal fold, be careful not to fold or crease that part of the paper which forms the long side of the tray. When the tray is finished, the folded corner turns back behind the short side, and all four sides will be smooth, straight, and square in the corners.

Proceed in the reverse order with the left-hand corner (using the finger of the right hand to open the pocket); and when this is done, fold the opposite long edge of the paper in the same manner. When all the folds are made, open out and smooth down the long folds; remove the clamps; open and smooth down the end folds (that were under the clamps); lay the weight aside; lift the folding-plate off, and finally place the paper on a board of the same size, laying other papers, as you proceed, on top of this, until you have a pile of trays ready for use, easily moved, or readily covered up to protect them from dust, if they are not wanted immediately.

Independence, Cal.

RAMBLE NO. 147.

At Geo. W. Brodbeck's.

BY RAMBLER.

But midst the crowd, the hum, the shock of men,
To hear, to see, to feel, and to possess,
And roam along, the world's tired denizen,
With none to bless us, none whom we can bless;
Minions of splendor shrinking from distress,
None that with kindred consciousness endued,
If we were not, would seem to smile the less,
Of all that flattered, followed, sought, and sued,
This is to be alone: this, this is solitude.

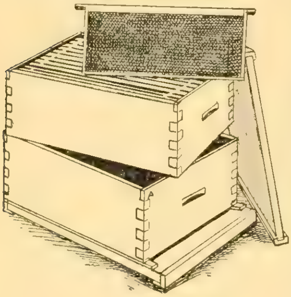
The writer of this has many times and in many cities felt this same solitude. There is a throng on the street, the rattle and animation of business; still, to the stranger in a strange city there come lonesome moments; and if there has ever been a symptom of homesickness with me it has been over the memory of the dear kind neighbors in the old home beyond the mountains. The difference is this: In the old home we have all grown up together; our joys and sorrows have been the same; we have been tried by a test of many years, and there is confidence placed in our words and acts according as those acts have been to truth and sobriety. But in one of these far western cities there is scarcely a person who has grown to manhood in any of them. They are gathered from the four quarters of the earth — all nationalities, colors, creeds, and dispositions. If there is a general selfishness manifested by the inhabitants it is for self-protection. We know not the antecedents of our neighbor; and we often suddenly find, after having given him our confidence, that the pleasing exterior hides an arrant scoundrel. Under these circumstances many make new acquaintances slowly, and but few of them.

In a two-years' residence, however, in one place, any person will find many kindred spirits; and so in this city I have found many good people; and one of my most valued friends, and one who gave the Rambler a cordial welcome when he arrived in Southern California, is Mr. Geo. W. Brodbeck.

Mr. Brodbeck removed from Indiana to California about eleven years ago. He was interested in bees in the East, and, though he engaged in mercantile business when he came to this city, as with all enthusiastic bee-men the hum of the insect was constantly in his ears. Mr. Brodbeck soon cultivated the acquaintance of bee-keepers, and was the leading spirit in the organization of the Southern California Bee-keepers' Association. It was a success as a local association, but there were quite a number of bee-keepers who thought it would have more influence if it could embrace the whole State, and it was accordingly changed to a State association in 1892, and Mr. Brodbeck's efforts have been untiring in the interests of the organization. Finding the confinement to business matters detrimental to health he retired from mercantile pursuits, and for the past three or four years has devoted himself almost entirely to bee-keeping.

It is an easy matter to pick up colonies of bees in this city. The hundred colonies, more or less, that are in houses, will swarm, and people will hive them in all sorts of boxes; and during the swarming season they can be purchased very cheaply. When a score or more are secured and transferred to good hives they can be increased rapidly. With these facts in mind, and being industrious, like the bee, Mr. Brodbeck soon had a respectable apiary.

Bees are not allowed within the city limits; but there is no law to prevent the location of an apiary on the border, where they can get the benefit of the shade-tree pasturage, which is of value here in the city. In locating an apiary near the city, the factor of land value comes in. The bee-keeper can not spread his apiary over valuable land. The rent would be more than the ordinary bee-keeper could pay and retain a profit. Therefore Mr. Brodbeck's apiary is located in narrow quarters, and close to one of those little eucalyptus groves so common in and near the city. The reader will observe from a mere glance at the picture herewith presented that Mr. B. is a scientific bee-keeper.


BRODBECK'S HIVE.

A hive in this hot climate warps less and lasts longer if kept well painted; and while in some localities an unpainted hive may be desirable, here such hives will absorb heat and melt the combs, many times, where a hive painted white will save them. Mr. Brodbeck uses white lead and the brush freely; and as he dispenses with those unsightly rocks that nearly all California bee-keepers think a necessary adjunct to the hive-cover, his apiary presents a neat appearance.

After putting together all of the pros and cons that enter into the successful production of honey, Mr. B. has adopted a hive that takes a Hoffman frame 16⅝ inches in length and 7 inches in depth. Nine of these frames and a division-board fit the hive. His reasoning and Mr. Danzenbaker's seem to run along the same line, which again verifies the old adage about "great minds." The Rambler suggested to Mr. B. that he might as well adopt the Heddon hive and done with it, and use the best hive extant. But our friend resented the advice; and in order to have peace in the family the matter was not pressed. It is my opinion, however, that Mr. B. got just as near to the Heddon hive as he could and not infringe on the patent. We always have a quarrel over this matter, and probably the matter will never be adjusted between us. In the construction of the hive itself Mr. B. has made a very neat improvement in the lock corner. The upper projection on the sides of the hive is shortened so as to fit against the thin portion rabbeted out for the frame-support. This insures the better nailing of the thin portion of the end, and a thorough nailing is necessary in this climate to prevent the warping of the corners. This improvement has been adopted by both of our local hive-manufacturers, and meets with the general approval of bee-keepers who use the lock-corner hives.

Mr. B. has made several other little improvements and short cuts in the management of bees. His sun extractor is a little different from the general order, in having a deep receptacle at the end for the honey and wax to collect. The honey in such a receptacle is not much colored by the heat of the sun, and this is a desirable point gained.

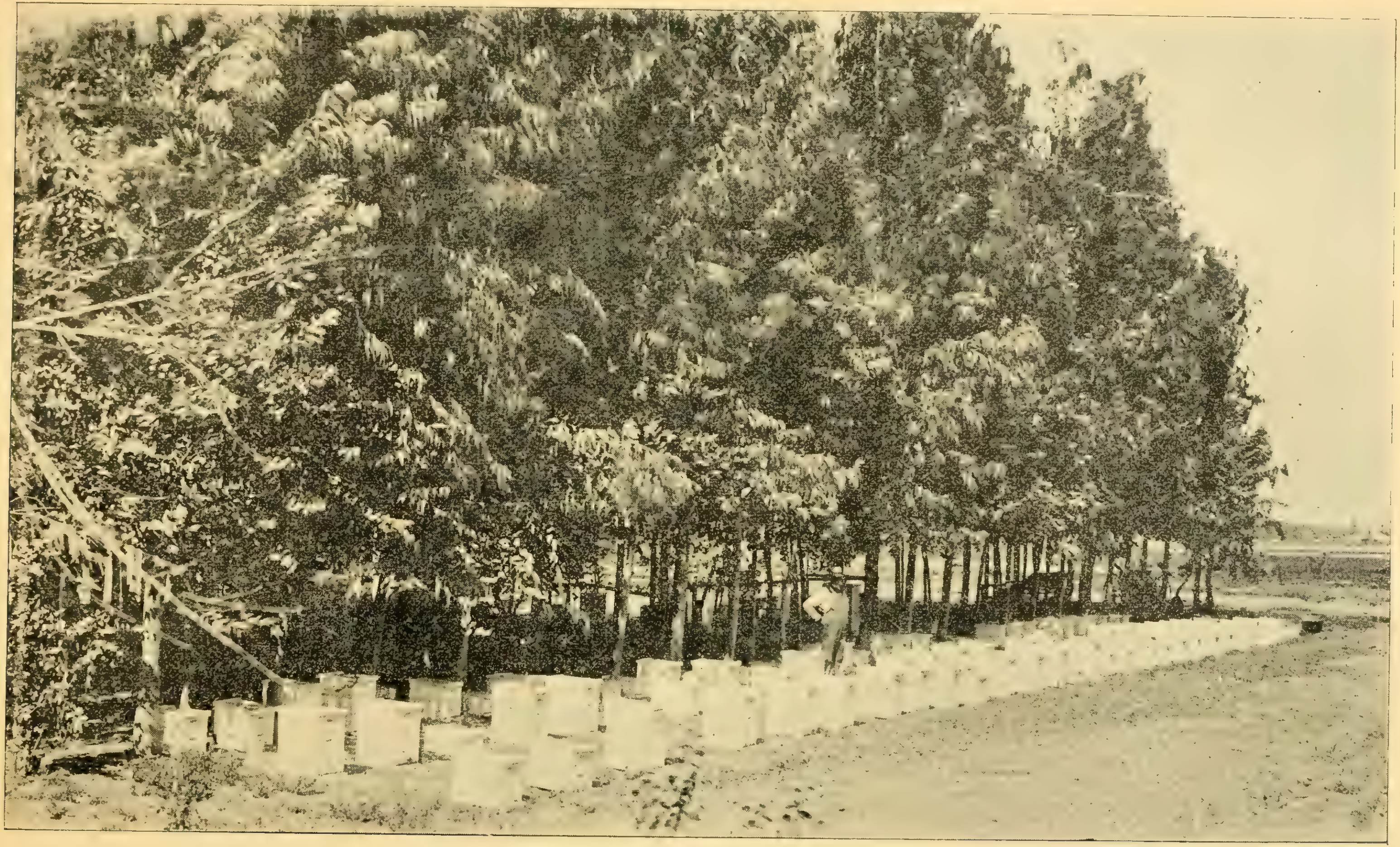
The Hoffman frame was adopted in this apiary from the fact that the apiary was to be worked on the migratory plan. While the city location is excellent for the wintering of bees and for building up an apiary, it is not a good location during the summer months unless there has been a light rainfall. In the latter event the bees are not sent into the rural wilds. They are better off in the city.

Like all extensive bee-keepers, Mr. B. has an accumulation of bee-fixings, and his shop is a very pleasant place in which to spend an hour; as the old adage has it, "Every thing is in apple-pie order." It may take time and much puttering to keep things so, but in the end we believe that it pays better than to follow the careless and slipshod method.

Although Mr. B. is an all-round enthusiastic bee-keeper he does not allow that to interfere with his various fads, the principal of which is English terriers. He claims to have the best-bred dogs on the continent, also claims they are the best-behaved canines in the city. He vigorously resents my assertion that they are cross bull-pups. I will compromise the matter, however, and call them terrors. Witness my experience.

BRODBECK'S TERRORS.

One day I visited the before-mentioned shop. As I approached there was a rattling of materials within; and, thinking to surprise Mr. B., whom I supposed was at work within, I put my face to the little window, and shout-



G. W. BRODBECK'S APIARY, LOS ANGELES, CAL.

ed, "Hello, Bro.—" But I stopped right there. One of those terrors shut his teeth together with a venomous snarl and howl just in front of my face. The terror had evidently been left on guard duty, and performed it well, and would have performed some more if it had gotten through the window. I had no desire to enter the shop; but seeing that the door was well secured I made the terror earn a whole day's rations. I will admit it was a mean advantage I took on the dog to poke sticks through the cracks of the door; but, of course, he was there for guard duty; and had I not stirred him or her up, there would have been no realizing sense of it.

In my next I will show how Mr. B. moves his bees, his method of managing an out-apiary, also some more about the terrors.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

TOO MUCH POLLEN IN COMBS; WHAT USE TO MAKE OF IT.

Question.—Some of the combs in my hives are so full of pollen that there is no room for either brood or honey. The wild (or frost) grape abounds here, and there is also an abundance of sorrel, from both of which the bees fill their combs with pollen to an extent that seems detrimental to the welfare of the colony. Do you think such gathering of pollen a disadvantage to the bees? and if so, will you tell us through GLEANINGS what can be done to remedy the matter?

Answer.—In some localities bees store so much pollen in their combs that it seems to those not as familiar with the inside workings of the hive as they might be that some device for removing this pollen would be of great benefit to them; in fact, some are so sure that such removal would be of enough benefit to them to warrant their offering as high as $25 for some plan to effectually remove pollen from the combs without materially injuring the same, as I once heard at one of the bee-conventions. Then some advise making combs containing much pollen into wax, and then working the wax over into comb foundation to put into the hive for the bees to draw out into comb again, but all such advice seems to me to be a damage rather than a help. In this locality we get large quantities of pollen, probably as much as is gathered in any place in the United States, yet I have never melted up a comb on that account, nor would I give a cent for the best machine that could be invented for its removal. Some claim that, where too much pollen is stored in combs, the bees remove it and tumble it out at the entrance; but I am inclined to think that they mistake that which is sometimes dislodged from the pollen-baskets of the bees at certain hives having too small an entrance, for that which is removed from the combs, as in all of my experience I have never known any to be thus thrown out unless said pollen had become moldy.

With me there are two different periods when the bees store for a short time much more pollen than is worked by the nurse bees into chyme for the young brood. One is during the bloom of hard maple, and the other during white-clover bloom. I have had combs of pollen gathered during the yield from hard or sugar maple, which weighed as high as four pounds. At such times as this I often work as follows:

Whenever the bees gather so much as to crowd the queen I draw the frames filled with pollen back away from the brood, and place such frames as may contain honey which are in the hive between these frames and the brood, thus causing great activity with the bees in changing things back as they wish them again, the result of which is the converting of both pollen and honey into brood much faster than would have resulted had things been left as they were. If the brood has increased enough so that this and the combs of pollen fill the hives, then the combs of pollen are taken away for the time being, and empty combs put in their stead. If there come a few rainy or windy days at this time, I find that what seemed to be a damaging amount of pollen is all exhausted, so that the cells are once more empty or filled with eggs, as it takes large quantities of food for the brood at this season of the year. After apple-bloom there is little for the bees to work on, and the surplus pollen is soon worked up into brood, and more needed, when I set back that which was removed, and thus brood-rearing is kept up more effectively than by feeding syrup or honey, or any of the many plans for stimulative feeding. I consider plenty of pollen in the combs during the period of scarcity between apple and clover bloom of great advantage.

The pollen gathered during white clover is treated differently by the bees from that gathered early. The latter rarely ever has honey placed on top of it, while that from clover is placed in the cells till they are nearly three-quarters full, when the cell is filled with honey, and sealed over so as to preserve it against a time of need during the latter part of winter and early spring. During the summer, as we find combs containing much pollen in this preserved state they are hung away in our room for storing combs, and sulphured as occasion may require, to kill the larvæ of the wax-moth, which are sure to injure such combs much if not thus treated. Combs containing pollen under honey are readily distinguished from those without by holding them up before a strong light and looking through them, especially so if the combs are new, or nearly so

When spring opens I again take the opportunity of placing near the brood all combs I have on hand containing pollen, and find that this answers a better purpose to stimulate brood-rearing at this time of year than the feeding of rye, oat, or any other meal, as is so often recommended by many of the fraternity. In this way all pollen is used up to a far better advantage than the inventing of machines for its removal from the combs, and is a great saving in many ways above the melting of the combs entirely, as some still persist in advising.

But until you become familiar with these ways of working it is not best to become self-conceited in these matters, lest you find yourself in the position of a certain preacher I once heard about, who had a way of promising to preach, and on beginning would say something similar to this: "I have been too busy to prepare a sermon; but if some one will kindly give me a text I'll preach from it." A certain friend of his determined to cure him, so invited him to preach. The invitation was accepted. When the time came he began his usual introduction: "Brethren, I have been so pushed for time since I received the invitation that I have been quite unable to prepare a sermon. But if some one in the audience will kindly give me a text I'll preach from it. Perhaps my brother here," turning to the plotter near him, "will suggest a text."

"Yes, brother," came the ready response; "I will do so. You will find the text I wish preached from in the last part of the ninth verse of the first chapter of Ezra, and the words are, 'nine and twenty knives.'"

There was a pause quite long drawn out, as the preacher found his text. He read it aloud, "Nine and twenty knives," and began at once. "Notice the number of these knives—just exactly nine and twenty; not thirty, not eight and twenty. There were no more and no less than nine and twenty knives." A pause—a long pause. Then slowly and emphatically, "Nine and twenty knives." A longer pause. Then, meditatively, "Nine and twenty knives." Again he rested. "Nine and twenty knives." A dead stop. "Nine and twenty knives; and if there were nine hundred and twenty knives I could not say another word."

HEADS OF GRAIN FROM DIFFERENT FIELDS

A SWARM THAT RETURNED TO A HIVE WITH A CLIPPED QUEEN; A FAIR QUESTION.

When a colony that has a clipped queen casts a swarm when no one is present to hive them, they will return into the hive from which they came. Now, what should be done to prevent further swarming, for I understand they will swarm again in a day or so?

Flora, Ill., May 28. G. J. STURM.

[Usually an attendant is present, and will give notice that this or that hive cast a swarm, and that the bees subsequently returned. It is true, as you say, that if a colony has once *tried* to swarm it will try it again. Indeed, it may keep on trying, and fool away the best part or all of the honey season, while the other colonies are busy in the supers. As soon as I know that a swarm has returned and gone back into the hive, I take away the parent hive and put another with frames of foundation (or empty combs) on the old stand. I now shake two-thirds of the bees in front of the entrance of the new hive on the old stand. I next place the super that was on the old hive on the new one. Last of all, I carry the old colony with the few bees to another location, and contract the entrance. The new hives with frames of foundation will probably cure the swarming mania.

If possible, the transfer of hives should take place while the swarm is in the air. An attendant can do this as well as the experienced bee-keeper; then when the bees return they are ready for business.—ED.]

EIGHT OR TEN FRAME HIVES—WHICH? THE EDITOR ASKED TO COME OUT SQUARE ON THE QUESTION.

Mr. Root:—I think you had better acknowledge what you believe in regard to the eight-frame "Langstroth" double brood-chamber. While your position does not affect any who carefully read your writings, especially between the lines, beginners and those who do not follow your teachings very closely think that you recommend eight frames for brood. Why don't you come out plain, and say what you believe and what A. I. R. used to teach, that ten Langstroth frames or their equivalent is a good compromise between large versus small brood-chambers?

GLEANINGS certainly took a wrong step years ago in recommending eight-frame hives for comb honey. Two or three or even more eight-frame stories may be all right for extracted honey; but for comb honey the trouble is in getting the sixteen frames crammed full of bees and brood, especially before the surplus season; and you in editorial, p. 400, as well as others, acknowledge the difficulty.

Ten frames are as many as most of us succeed in getting; and the general opinion of apicultural writers, with but few exceptions, is that eight brood-frames are not enough, and then we have the excessive swarming to contend with. H. H. MCKINNEY.

Renfrew, Pa., May 30.

[I do not know but I am like Dr. Miller — I don't know which is better — the eight or ten frame. I know this: That the eight-frame with single brood-chamber is not nearly large enough. I am pretty well satisfied, also, that the ten-frame is too small. I am not sure that a twelve-frame Langstroth brood-nest is large enough. An eight-frame body is plenty heavy enough to lift when it is full of honey; and I am almost inclined to believe that two eights — that is, 16 frames in all — are none too big for a brood-nest; but ten-framers would be too large. No, I prefer an eight-frame to a ten-frame; and I think I should prefer a twelve-frame to a ten-frame; but if a twelve-frame is too small, then I should rather have two eight-frames.

You seem to feel that I *know* that a ten-frame is better than an eight-frame, but that I am *afraid* to say it. If I really *believed* that a ten-frame were the right thing I would talk ten-frame and not two eight-framers as I have been doing. I still favor an eight-frame, but only in *pairs*. Now, if this is not square enough I do not know how I can make it any "squarer."—Ed.]

GOOD NEWS FROM FLORIDA.

Friend Root:—My bees are fairly tumbling over each other, carrying in palmetto honey. One colony carried in 78 lbs. in 11 days. Others have done as well, perhaps; some I did not weigh did better. I have taken 1000 lbs. from 19 colonies in a few days. This supplies home demand for the present. Can you tell me where to ship it? The prospect is, this flow will last six weeks yet, and then will follow the mangrove and cabbage palmetto. What we get now is the small scrub palmetto. It is the finest honey I have had—white clover, orange bloom, and basswood not excepted.

There has been very little rain for months, consequently our honey is very thick and high-flavored. I am situated between Sarasota and Palma Sola Bays, five miles southwest of Braidentown. I think it is about as good a location for an apiary as can be found. I manage to retail honey here at 75 cents a gallon by peddling from house to house.

I was at Palma Sola postoffice the other day. We had a laugh about A. I. R. His "How old are you, sis?" is married, and her husband is carrying the mail.

Francis Trueblood.

Braidentown, Fla., May 20.

[We are very glad indeed to hear you are getting some honey. It sounds a little like old times; and, if I am correct, this comes from the special locality where I was impressed so strongly that it was the place for the bee-keeper to locate; and I am specially anxious to know how the mangrove yields in your locality. If you should ever see my "little girl," please give her my regards. Tell her husband that I congratulate him, and that I hope he will take good care of her.—A. I. R.]

HOW TO CUT FOUNDATION; FACING HONEY; T SUPERS AND SECTION-HOLDERS.

When you want to cut foundation to any size, just make a box without top or ends, and of a width and length that will hold your sheets of foundation. Cut saw-kerfs on both sides of your box, from top of side boards down to the bottom board, and as far apart as the length of the cuts of foundation you want to make. When done it will look like a carpenter's miter-box, with the exception that the saw-cuts will be opposite. Then take a handsaw and grind the back of the blade to a keen edge; place your sheets of foundation in the box, your saw in the kerfs already made, and go ahead.

In crating honey, tying up wool, putting down carpets, putting a patch on your coat, if you don't put the best side out, which side *will* you put out? The man who would put his best apples, potatoes, etc., in the middle of the barrel, his worst and poorest wool on the outside of his fleece, and his best honey in the middle of the crate, may have a clear conscience, but he will be classed as a fool by business men.

Stop your jawing about the merits of the section-holder and the T super; let the people have just which they want. If you *will*, I won't take either.

Lightning operators must be getting to be a fad. Say, Rambler, about how long would one of those lightning splitters kick around among some of that Cyprian blood you sometimes find in California?

M. W. Shepherd.

Mannville, Fla., May 19.

THE PEPPER-TREE, AGAIN.

In Gleanings for May 1st I find a mistake that was evidently made in the printers' hands. You head the article in relation to the pepper-tree as follows: "The Eucalyptus (or Pepper) Tree." Now, the pepper-tree is no relation whatever to the eucalyptus. It is a distinct species; and I am sure that, in my description, I did not mention the latter. The article would lead the reader to believe they are one and the same

We are having a glorious rain in this northern portion of the State. I hardly think it reaches the southern portion; and even if it does, it will hardly do much good except to very late honey-plants. This portion of the State always has more rain than they do in the South.

J. H. Martin.

Oro Fino, Cal., May 21.

[The heading to the copy you sent had only "Pepper-tree;" but A. I. R., who put on the footnote, must have penciled on the galley-proof the word "Eucalyptus," which should not have been there; hence the mistake. See answer to R. Wilkin in June 1st issue.—Ed.]

HOW TO DISTINGUISH SUPERSEDING CELLS FROM SWARM CELLS.

Kindly state how to distinguish queen-cells being built for superseding an old queen, from those built when the bees are about to swarm; also when a hive has an old queen and a virgin queen, as is the case with one of mine, what had better be done—leave them to take care of themselves, or divide? My object is to have one hive as strong as possible, to secure the largest amount of honey.

Asheville, N. C. C. E. Moody.

[If there is any way of distinguishing the two classes of cells, I must say I do not know upon what basis the distinction is made, except that swarm-cells are usually large, like great big peanuts. While superseding cells *may be* just as large, they are more inclined to be smaller. If cells are started when there is already an old queen in the hive, and it is *not* during the swarming season, I assume that the cells, if present, are of the superseding kind. If, on the other hand, the queen is not over two years old, and cells were started during the swarming season, then I take it for granted that the cells are of the swarming kind.—Ed.]

EDITORIAL
BY
E. R. ROOT

MR. H. H. PAGE, of the Page & Lyon Mfg. Co., New London, Wis., died on the 23d of May, at the age of 80 years. Page & Lyon is a firm that has come to be well and favorably known, and has long been an advertiser with us. If we are correct, Mr. M. D. Keith is the active man of the supply department, and the affairs of the firm so far as they relate to bee-keeping will continue as before.

RAMBLER'S RAMBLES RESUMED.

IN our previous issue I omitted to state the fact that John H. Martin, the Rambler, is now on another rambling-tour through California, in the northern part of that State. The articles began right where they left off—No. 146; and for any thing I know they will continue till further notice. They will be of the same general nature as the former Rambles, which were so eagerly sought for by our readers in the past, and Mr. Murray will be the special artist as before. Rambler will take along his ever-faithful camera and ever-present umbrella; and you may be sure that, through his eyes, his camera, and his typewriter (for he uses one now), our readers will see some interesting things. He is no longer a "tenderfoot," but a Californian in the full sense of the word.

SHIPPING COMB HONEY BY EXPRESS.

IN years gone by we have cautioned bee-keepers against shipping comb honey by express. In the first place, the rates are exorbitant, and the commission man is sure to charge it up to the bee-keeper. In the second place, when properly put up, comb honey will go much more safely by freight, even throwing out of the account the difference in charges. Comb honey will not spoil, like strawberries, and there is no need of immediate haste to get it to market. Haste makes waste; and if ever that old saw applied it is when one is foolish enough to send his honey by express. The editor of the *American Bee Journal* thus discourses on the same subject:

> A prominent Chicago honey-dealer sent for us to come and see a lot of comb honey that he had just received—from a bee-keeper about 50 miles from Chicago. The honey was put up in double-tier out-of-date 24-pound shipping cases, and two of them had been fastened together by nailing pieces of lath across their ends. There was perhaps 500 pounds of beautiful honey in the shipment. But it wasn't so beautiful when the commission man received it. It was the worst broken-up—and broken down — leaky lot of honey we ever saw. It was shipped by *express*. That, of course, explained it. We could scarcely believe it, when we were shown the shipper's letter, to find that he was an old, experienced bee-keeper, and yet knew no better than to ship such a lot of honey by express! Of course, he doesn't read the *American Bee Journal*.
>
> The producer, in his letter of instructions to the dealer, was very careful to tell how carefully the honey was graded, and how well it was put up; and that he expected a good price for it, of course. But we wouldn't have given 5 cents per pound for it. Why, we shouldn't have wanted such a mess at any price.
>
> It seems strange that, after the bee papers have been so careful to tell honey-producers just *how* to prepare and ship comb honey, those that should know better will simply go on in their blindness, and then blame the commission man, very likely, if any thing is wrong, or different from what was expected. And yet, if some folks think they know it all, and won't read, they will have to take the consequences, of course.
>
> Now, *don't* ship comb honey by express. Put the shipping-cases of honey in large crates holding perhaps 200 pounds each, with several inches of straw in the bottom and sides of the crate. Then nail a 3 or 4 inch board on each side a third of the way down from the top, letting the boards extend about eight inches at each end. for handles by which two men will carry the crate. Honey thus packed will stand lots of bumping around, and will almost invariably reach its destination without any breakage whatever.

It is almost unnecessary for us to state that our experience in handling comb honey leads us to indorse every word. Indeed, I should like to underscore every line of it in red ink if I could.

NOAH D. WEST.

LATE one afternoon last August I found myself *en route* for Schoharie, on the Middleburgh & Schoharie R. R. But before I knew it, scarcely, I had reached the end of the road, the conductor having carried me past my destination. "Middleburgh? Middleburgh?" I kept saying over to myself. "Why does that sound familiar to me? Why, sure enough, that is where N. D. West lives — the man who invented the West queen-cell protector, queen-cage, and bee-escape." He was the man whom I ran across accidentally on my first bicycle-tour away back in 1890. At that time I made only a brief call, but enough to satisfy myself that N. D. West was one of the prominent bee-keepers of York State—a man who has from 300 to 400 colonies in from three to five different out-yards.

N. D. WEST.

At the time, I did not relish the fact that the conductor had carried me beyond my destination; but the more I thought of it the more I thought there must be some providence in it.

As my bicycle had been left behind, I engaged a livery rig to take me out to Mr. West's home. Unfortunately, both Mr. and Mrs. West were out on a tour of selling honey, and would not be back for a week; but one son and daughter were at home, and the man who helped to take care of the bees.

A beautiful hill (for which New York is famed) stands back of the homestead and home apiary. I snapped my Kodak on it twice, taking in the apiary in the foreground; but, unfortunately, the film was poor. But I later secured a picture of Mr. West himself—a very familiar face at bee-conventions.

At the time of my former trip, 1890, Mr. West was using nail-spaced or staple-spaced frames. He was still using them last summer, but was slowly introducing into his apiaries the Hetherington-Quinby closed-end frame. I do not remember distinctly now, but I believe, all things considered, he preferred this frame, both for winter and for general handling. His son pulled apart one of these hives, while I with Kodak stood ready to take in the whole method of manipulation; but owing to aforesaid poor film, and to the fact that the bees were "fighting mad," my shots did not amount to any thing. I managed to press the button three or four times, in spite of the bees. The buckwheat flow had only just about closed; and as the morning air was a little cool, the West bees did not seem to take kindly to having me prying into their affairs.

Mr. West, like all inventors, has an interesting workshop; and during the odd days when he can not do much else, he evidently enjoys himself "making things." I should judge so from the numerous ingenious contrivances of various construction here and there, among which was the West queen-cell protector, queen-cage for virgin queens, and the West bee-escape.

WORK AT OUR OUT-YARD; SMOKER FUEL.

I AM having lots of fun now at our out-yard; and the more I handle bees the more I am convinced there is something new to learn, or, rather, some old new thing that has been overlooked. For instance, did you never discover that, when using excelsior or shaving-fuel (planer-shavings), you get far better results by using a little rotten wood with them? The last named serves to hold the fire, and prevents the smoker from going out at a critical moment when the shavings are about burned out. About as nice a thing as I have found yet is to take an old dry limb of a tree, bone-dry, and snap it up into right lengths. Four or five of these, about as large as one's finger, are to be mixed in with the shaving fuel; then, my, oh my! I am ready to bombard the worst bees or hornets in regular Dewey fashion.

BEE-SUIT.

Oh, yes! I have gotten a great deal of comfort out of a pair of overalls with apron front—that is, just about such overalls as machinists, firemen, and engineers use. Mrs. R. says I have a great fashion of soiling my clothes with honey, wax, and propolis—more often the last named. It has been such a bother to change my clothes that I have been in the habit of going to the out-yard with my nice "how-do-you-do?" every-day business suit. Well, now the program is all changed. With a pair of overalls, with bib (or apron) front, the bib coming almost to my chin, and being held up by shoulder-straps hitched to the rear elevation of pants (sometimes when I get tired of standing), it is a real comfort to get down on my knees in the dirt, and feel that I am not spoiling good clothes by the operation. By the way, these overall suits can be procured with handy pockets so that small tools like a scraping-knife, screwdriver, etc., can be within convenient reach.

AN AUTOMATIC CONTRIVANCE FOR CATCHING QUEENS.

After you had hunted through a powerful colony for the queen to clip her and could not find her, and hunted again, with the same result, did you never wish you had a sort of machine that would do the work something after the fashion of a trap to catch a mouse, except that the mouse in this case would be the queen? Suppose, for instance, you could raise the cover and slip a—well, a rigamajig between the frames, put the cover down, and let it stand till the next day. S'pos'n you could go to this hive, and a lot more like it similarly rigged out, lift out your rigamajig with the queen in it; clip her wings, and let her loose in the hive again.

Perhaps this speculation is rather wild. I am inclined to think so myself, for I really do not see how a trap could be devised that would do the work—unless a Porter bee-escape in connection with a cage of some sort. But here is the rub: What shall we do for a bait to get the queen to the trap? I do not know of any thing unless it be a queen-cell containing a virgin qneen, of which the reigning mother might be so jealous as to crawl into the bee-escape in order to destroy the cell.

Well, I shall have to stop speculating. If some one else has discovered something that will catch the queen and save this everlasting job of hunting when we go through the apiary every year to clip queens, well, I shall rise up and call him blessed.

But, say! look here. Is not the best solution of the problem, after all, an Alley trap? That saves mutilating the queen's wings, is ever ready to catch the queen, and, besides, will trap the drones upstairs, where they die, no longer loafers and idle consumers of the treasure of the hive. The old-style Alley traps had too small an amount of perforated-zinc surface. The new style has more surface, and more holes to the square inch.

A PRY FOR SEPARATING HIVE-BODIES.

For the last few days I have been trying various sorts of pries in lieu of a screwdriver—putty-knives, scrapers, and all sorts of tools; and so far the best one I have seen or tried, rather, is the one made by E. P. Churchill. Here is what he says about it:

I see in GLEANINGS a cut of frame and hive mover. Some ten years ago I decided that a screwdriver was about the worst thing about moving frames and lifting cases, etc., and I made a tool that is one of all sorts. We need a scraper in the corners of hives as well as, often, at sides and bottom; and, too, it's just the thing to clean in corners of window-sash, and then the women can scrape the spider and kettle bottoms; and it's just the tool to scrape up spots on the floor. They can be made of wornout files if one wishes, and save quite an item. I'm not a real blacksmith, but I'm going to the shop and make one and send you. You will see I make the wide end standing out so as to reach handily into corners of hives or any corner; and after using awhile, all who use them say, "Why didn't I think of that before?"

I make another tool for a wide scraper only, that works nicely. One party said it was the best thing he ever saw. E. P. CHURCHILL.

Hallowell, Me.

NO HONEY, AND PROSPECTS NOT FLATTERING.

UP to this date, June 14, so far only one report has been received showing that honey is coming in. All the rest report no honey and few swarms. For two weeks our bees have had to be fed, notwithstanding the white clover has been out in full bloom a part of this time; but up till within three or four days it has been quite dry. We are just now rejoicing over the abundant rains so much needed. We begin to hope that the nectar will begin to come.

Present indications go to show that there will probably be a fair flow from basswood, although at our basswood apiary there is scarcely a tree that has any buds on it; but the forest-trees and shade-trees are loaded.

DRAWN FOUNDATION WITH NATURAL BASES.

SEVERAL have written of late, asking why we had nothing to say about drawn foundation. I will explain: It will be remembered that the dies that were made last season at so great an expense (nearly $1000) turned out a product with *flat* bases. Our early experiments seemed to show that, when cells were deep, the bees would accept such a base as readily as the other. But the developments of the season went to show that the bees did not in all cases take kindly to it. In some instances, at least, they thickened the midrib in their effort to make concave cell-bottoms. While they did not do so in all cases, the fact that the bees did so at all in a few instances was sufficient reason to induce us to abandon the dies, as much as they cost, and go to work on a set that would produce *natural* bases.

Mr. Weed thought the problem would be easily solved; but although he has been working on it for nearly a year, meeting with repeated failure, he has only just succeeded in having a set made that makes drawn foundation with natural bases a success in every way—at least so far as the mechanical construction of it is concerned. In the mean time while he was experimenting we feared that he might not be able to perfect his dies, and it seemed wise to say nothing about the new product until we were *sure* of what we could do.

I am now glad to report that the new dies are in operation, and making a superb drawn foundation with *natural bases*. This product differs from the old in two quite important respects. First it has the natural bases already referred to, and, second, the cells are only ⅛ inch deep. I suppose we *could* make them deeper; but a few of our friends, fearing that deep walls will either give rise to the comb-honey canard or else make thick cell-walls in comb honey, we refrain. With the cell-walls only ⅛ inch deep it will run almost as many feet to the pound as the ordinary super foundation. It is nothing more nor less than a beautiful transparent foundation having bases as thin as the bees make them, with cell-walls about twice as thick as we find them in nature. Indeed, it looks very much like common foundation, except that the walls are nicely started for the bees, and the bases are much thinner.

Mr. Weed is very confident that they will not remodel the bases, nor will they stick in an accumulation of wax as they did do with the old flat-base drawn foundation. From the tests he has made in the hive, it appears the bees have a decided preference for it. Samples of ordinary foundation and the natural-base drawn foundation were placed side by side. The bees immediately accepted the one (deep cell) and ignored the other; that is to say, I have myself seen the drawn-foundation piece thickly covered over with bees while the ordinary article had not a bee on it.

I make no predictions as to what the new product will accomplish; but I feel reasonably confident that it will give rise to no thick midrib in honey-comb as did the old-fashioned flat-bottom drawn foundation; and as the cell-walls are only ⅛ inch deep, there should be no occasion for fearing that it will give rise to canards about manufactured comb honey.

A moment ago I said the cell-walls of the new drawn foundation were twice as thick as we find them in nature. It would be possible to make them just as thin as the bees construct them; but Mr. Weed is satisfied that the bees will thin the *walls* when they will do little or nothing with the *bases*. The extensive experiments we have made in the past satisfy us that this is correct.

Universal testimony (with, perhaps, one or two exceptions) went to show that drawn foundation, imperfect as it was last season, was readily accepted by the bees; but owing to the fact that the base was flat, they did not seem to like it after they had had further acquaintance with it; and in some cases, at least, comb honey was not completed from it any sooner, if as soon, as from common foundation. But now that we have given the bees the same article with a *natural base*, we expect different results. But if, however, the bees make from it a "gobby" article of comb honey, no one will be quicker to drop it than the Root Co. The fact that we abandoned the flat-base foundation last season because of this defect is pretty good evidence that we will do as we agree. But neither Mr. Weed nor ourselves would have put a lot more money into the new dies if we had not felt reasonably sure that the article we are *now* offering to the public would be free from the objections found against that which we put out last season.

We are now prepared to furnish it in small sheets and quantities as indicated in Special Notices elsewhere.

NOTES OF TRAVEL

BY A. I. ROOT

ON THE WHEEL.

There were two reasons why I had not had a long wheelride this spring. With so much rain till toward the last of May, the roads have been bad; and with such a great crowd of business it seemed almost wicked for me to desert my post. About the first of June, however, I began to feel a good deal used up. When everybody else was around in summer clothing, I still held on to my overcoat and fur cap; and if the wind got in the northeast, I was having grip and rheumatic pains or some other kind, it does not matter what they were. I had been reading letters so much that the mere act of reading a letter affected me very much as it used to when I tried to answer all the correspondence with my right hand and with a pen or pencil. First I had to stop writing; then I got a typewriter, and wrote with my left hand. When I could do this no longer I began to dictate; but of late, reading letters, or even dictating, seems to affect my right arm much as writing with a pencil did years ago. Yes, and finally it got so bad that I could not read the war news in the evening more than 15 or 20 minutes, without getting that old pain in my right arm and side. My digestion was bad also, and I began to think my days of usefulness were about gone by. How about the wheel? Well, I began to have despondent misgivings that even the wheel would fail this time. Finally I began to be so troubled about my health that I (once more) commenced *praying* over the matter. I wonder if somebody says to himself, "Why, Bro. Root, where was all your faith in God you have been for years talking so much about? You tried this, that, and the other; and last of all, instead of *first* of all (as we might expect from your teachings), you went down on your knees and laid the whole matter before the great Father above." Well, dear friends, I do not know how it is; but that seems to be the old story over and over again. When I get into real trouble, and there seems to be no other outlet, *then* I bethink myself of God's promises.

One evening, about the first of June, when I had been trying to read, and found that it absolutely would not answer, just before going to bed I asked God with unusual fervency to take the poor remnant of myself into his hands and keeping, and tell me what he would have me do. Just after that prayer I remembered that I had a pressing invitation to attend a bee-keepers' and horticulturists' meeting in the southern part of our State. In fact, the invitation had come some weeks before; but I decided it would be out of the question for me to desert my post at this busy time. But when it began to seem as if I was not going to be of much use at home I changed my mind.

On the morning of June 1st I was up at four o'clock, tiptoeing around the kitchen in my stocking-feet, so as not to awaken Mrs. Root. After the fire was lighted, the kettle boiling, and every thing ready for her, I told her I must be off in just 20 minutes. She scolded me for not having awakened her sooner, and a little after five I was on my Columbia chainless, with light summer clothing. I thought once I should have to take my overcoat and fur cap. But I began to have faith that the wheel would banish the chills as it had done many times before.

My first destination was Sterling, Wayne Co., Ohio, where I was to catch the 7:40 train. I made the 14 miles in plenty of time, besides making a few pleasant calls on people I knew on the way. Then I enjoyed a hundred miles or more on the cars. Oh how pretty our State of Ohio looked on that June morning! My wheelride of 14 miles had sent the blood coursing through my veins so as to give me life enough to enjoy the beauties of a June ride over the country.

I left the train at Springfield, the county-seat of Clarke Co., a little after twelve o'clock. As I had the whole afternoon for making about twenty miles, I decided to visit a wonderful Indian mound at Enon, Clarke Co. My ride took me over the Dayton pike. In this part of the State, limestone pikes go out in every direction; and one can ride at almost any time when it is not actually raining. As I neared the town of Enon, the mound was in plain sight. It rises abruptly in the middle of a clover-field. The height is about 40 feet, and the sides are about as steep as dirt can be piled up. On the summit there is a level place some fifteen or twenty feet across, and one of the largest pear-trees I ever saw grows up there with great luxuriance. In fact, a little orchard has recently been planted all over this mound. A friend suggested that these mounds are the burial-places of ancient chiefs or kings Said chief is always buried with his tomahawk, and trinkets made of copper, flint, etc.; and to prevent other tribes from digging up the body or bodies they adopted the plan of piling dirt over the remains. The greater the chief, the bigger the pile of dirt. The secret of the luxuriant grass, weeds, etc., and brush all over this mound, I judged to be because they had scraped up the surface soil to make it. A friend told me they often buried a number of persons with their heads in the center and feet out, like the spokes of a wheel. The copper ornaments and valuables were placed near the heads, in the center; then dirt was carried and put over all in such a quantity that other tribes would not be very likely to take the trouble to dig it away or disturb the remains. I wish that somebody conversant in such matters would tell me if I have a correct understanding of the reason why so many of these Indian mounds are found in different parts of Ohio.

Seven or eight miles from Enon I was told there was a celebrated spring at a town called Yellow Springs. They told me I would have to take a back road off from the pike, but they thought I would find it quite smooth if I did not mind the hills. I found the road very much pleasanter in one respect than the stone pikes. There was not very much travel over it, and so it was free from dust; but the road was made of broken stone, just the same. I had strapped my coat on the handle-bars; and after I got to going down one hill and up another on that smooth stone track I began to gather life and enthusiasm. As it was a lonely road with but few buildings in sight I unbuttoned my vest, took off my cap, and laughed aloud to think of my deliverance from overcoat, fur cap, and neuralgic pains. I thanked God, and sang praises to him because he had heard my prayer and given me such complete emancipation from my troubles. In that wonderful book I have before alluded to, "A Singular Life," the hero, at one point in his life, gives voice to a prayer something like this:

"Lord, I have groped after thee, and to know thy will, and to do it if I could. I never expected to be happy. Dost thou mean this draught of human joy for *me?*"

Well, in spite of me my feeling was something like what is expressed in that prayer. I opened my mouth wide, and drew in long breaths of delicious cool air that expanded my lungs to their utmost extent. I did it again and again as I flew up and down the hills with the gentle breeze in my face. I could actually feel strength and energy pouring in at every nerve, and filling me with health and happiness; and I knew from former experience that this is wholesome and lasting energy. I knew that the oxygen that I was taking in by the "bucketful" that afternoon was going to last me several days at least. Let me digress a minute.

The exhilaration I have been describing was due, without question, to large doses of oxygen. Every physician, physiologist, and teacher will tell you so. There was not any humbug about it. Now, please pardon me if I touch on a particular hobby of mine. The men who advertise Electropoise and Oxydonor will tell you their humbug toy takes oxygen from the air and conveys it to the system; and people accept the falsehood and pay out their hard-earned money for the silly trap. Some of you may tell me that the venders of these things are sincere. They are *not* sincere. When they invented the foolish story about oxygen crawling along a single wire,* they knew it was a falsehood; and you can no more excuse them by saying they were honest, though mistaken, than by pleading that the man who makes counterfeit money is honest though mistaken. Did the counterfeiter ever believe that the money he made was genuine? Surely not. He deliberately planned to defraud his fellow-man, and you can not make any thing else out of it. Now, friends, when you see in any advertisement that the trap or medicine takes oxygen from the air and sends it into the system, you may know it is a deliberate fraud. Oxygen can get into the body through the lungs and into the blood only in the way God planned it in the beginning. Indeed, its presence in the system through any other avenue would doubtless be very undesirable; and in the case of cuts it must be rigidly excluded.

Right in the middle of the town of Yellow Springs there is indeed a wonderful spring. It contains sufficient iron to give the rocks from which the water flows a yellowish or reddish tint, and this gives the spring the name it bears. The water is cool and refreshing, and it comes in sufficient quantity to fill a little pond and make a very pretty waterfall. A large hotel, with bathing-rooms, etc., is near by. After enjoying the refreshing water of this spring by sipping it leisurely for some little time, I went into a restaurant, and told them I wanted to lie down somewhere and rest for an hour; and when I should wake up I wanted them to have ready the nicest beefsteak they could find in town. A pleasant-looking woman assured me I could have both the rest and the steak, with such a pleasant smile that I thanked God again for this beautiful world of ours with all its comforts, and for the wonderful way in which each and all minister to the wants of others. I had a refreshing nap, as I always do—that is, when I do not ride *too* hard; but when I was looking for my beefsteak my hostess informed me that she guessed I would have to take something else, for the man who generally brought her the meat could not be found anywhere. But I was feeling too well then to be cross about any thing, and so I told her to bring me any thing she had, as I wanted to be off. She said she could give me eggs and toast and strawberries—the first berries of the season. And then I felt thankful to remember that, while off on wheelrides away from business, I could eat almost what I pleased, or what other people did. I made the remaining ten miles of my trip over that beautiful pike so quickly that I reached Xenia just as my relatives were at tea. So I sat down with them and had some *more* strawberries while we talked over matters in general.

The progressive people of Greene Co. hold horticultural and apicultural meetings once a month the year round. The meetings are held at different places so as to accommodate the people from different parts of the county; and in the summer time they generally hold them at the residence of some bee-keeper or fruit-grower, or both together. This one was held in a beautiful schoolhouse at Alpha Corners. Refreshment was spread on tables in a beautiful grove in front of the schoolhouse. They proposed to have me talk a good part of the afternoon. I said, "All right, friends; I will talk just as long as you wish to have me—that is, if you will ask questions, and tell me on what line I can give most assistance. But before going to the hall, let me lie down somewhere and sleep about half an hour."

One of the fruit growers furnished me a dainty sleeping-place. In fact, every thing was so comfortable and pleasant that I forgot to wake up till a delegation was sent to inform me that dinner was ready. Well, to make a short cut, and to get to the dining-tables as quickly as possible, they started to pilot me through a strawberry-patch. Now, this patch was planted like our matted rows; but the proprietor took a cultivator made just right, and sliced the matted row down to about six inches in width. Then he mulched it with straw in the fall, and the berries were just ripening. Of course, I wanted to see how many I could call by name; but there were some seedlings originated by the owner, that I had never seen before. They had a peculiar spicy flavor, and—how do you suppose A. I. Root is going to get to the dinner-table, even if everybody *is* waiting, when at every step he encounters new varieties of strawberries—great whoppers, with new and brilliant color and exquisite aroma? I do not know but a second delegation was sent to hurry up the first one; but we finally caught up and mingled with the crowd around the well-filled dining-tables. Right before my plate was a great heaping dishful of garnet-colored Warfield strawberries. But we had to stop talking about strawberries a minute, for somebody was calling us to order, and then I was a little startled when it was announced that "Brother Root will give thanks." Well, I had been giving thanks all the morning, so it did not trouble me particularly to express my thanks out loud. It seems that a large club of GLEANINGS has been going down to Greene County and vicinity for a good many years. Some of the gray-headed veterans assured me that they had been reading it with unabated interest since it was printed by windmill power; and they had always felt a longing to see A. I. Root, and take him by the hand. I think I must have talked half an hour or more, and then I answered questions as best I could for another half hour or more. The schoolroom was crowded so that two people sat in a seat that was intended for only one. The women and children were there—yes, and the prattling babies. How can we have a good farmers' meeting without them? I told them my talk would be about God's gifts, and that, before starting, I wanted to direct attention to one of his most precious gifts—music; and that, while I thanked God for music, I also wanted to thank the good lady who had cheered our exercises with so many beautiful pieces. Now, I did not tell her nor that audience what wonderful thrills of joy poured through my soul by listening to the different pieces she gave us. Mrs. Root would say, very likely, that it was my wheelrides that gave me inspiration and enthusiasm to enjoy the music. If I should say that there was at least *one* song that to me was more entrancing than any thing I ever heard before, some of you would remember that I have said almost the same thing on several occasions before.* Well, even if I have I tell you that the Greene County bee-keepers and fruit-growers are not only well up with the rest of the world in farming and horticulture and bee-keeping, but they know how to get up a dinner and entertain folks, and how to get them to come out in crowds, even in the month of June; and the *music* they provide is by no means behind in quality with the other good things. I do not know but I have sometimes criticised people for neglecting work that ought to be done, to go to picnics; but I tell you the horticultural picnic is a different affair. I wonder how many counties there are in Ohio that have similar gatherings. This association has been kept up, if I am correct, for a good many years, and they succeed in getting a good attendance every month in the year.

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* This oxygen story is just as sensible as the claim that, by means of a wire, one could convey corn out of a crib into a pigpen so as to fatten swine; and yet religious papers give place to such ridiculous claims, and ministers of the gospel lend their names by way of indorsement.

Only seven miles away, in the city of Dayton, I remembered I had a good sister waiting and watching for me; and although the people were a little curious about the wheel I rode without any chain, I bade them adieu and started off. I rode just fast enough to enjoy my ride comfortably; but as I was going down the last hill before arriving at the city of Dayton, somebody on a wheel behind me called out. The person said he had been chasing me every mile from Alpha schoolhouse; and as he had a new Columbia he did not think I would get so far before he overhauled me. This friend, Mr. B. Grant Smith, is in the mail service on one of our railways. He is also a bee-keeper, and volunteered his services in showing me around the city of Dayton; and I shall always feel much indebted to him when I think of the beautiful ride we had through the city in the evening. You see I had the finest wheel the world can make (at least the Columbia people say so). Then I was riding on the finest asphalt pavement there is in Ohio—perhaps in the United States (at least the Dayton people say it is); and, to cap all, my comrade informed me that I would have to have a lamp on my wheel or else the police would "pull me up." So he went into an immense bicycle-store and got one of the latest acetylene lamps ("the finest in the world" so the maker says). This lamp is charged by putting in a little tin cartridge. These cartridges cost 35 cts. a dozen, and one cartridge runs a whole evening, and gives light enough to show the time of night on a clock in a church-steeple. Among other sights he took me over the grounds of the National Cash Register Co. I went around the next morning and spent an hour in looking over the works from the outside. I did not go through the inside, because my train left at too early an hour. There may be finer manufacturing establishments in the world than this one in Dayton, but I doubt whether there is one very much better. The whole plant is in the midst of a beautiful lawn, covered with ornamental plants and shrubs, and kept in order by a professional landscape-gardener—one who is an artist in every sense of the word. A brief glance at this establishment teaches us valuable lessons. For instance, it is possible for a machine-shop or foundry to be managed with such order and system and neatness that it shall look more like a drawing-room than it does the average machine-shop or foundry. At one side of the grounds there are two very pretty buildings labeled respectively "Men's Bicycles," "Ladies' Bicycles." The whole locality looks more like a fairy land than a place where men and women work; and the contrast is so wonderfully strong, that, compared with the great part of the workshops and factories in our land, it startles one. The proprietors evidently, in planning for their works, chose a part of the city where they could have plenty of room. In fact, the whole institution covers several acres. Instead of trying to make every foot of space available for business, there is a front yard of beautiful velvety lawn, beds of flowers, and beautifully kept shrubbery, that would grace the finest dwelling. Then there are walks of sawed stone flagging, wagon roads of asphalt pavement, and, more wonderful still, the little cottages that surround the grounds seem to have caught the spirit from the big establishment, for they too are models of artistic beauty. Their little lawns, flower-beds, and shrubbery, are in very good keeping with the great establishment itself. In the background, away from the main street, behind the factories, there is a boys' garden. It is divided off into plots of a rod or two in extent, and I am told prizes are awarded to the boy who shows the neatest design in gardening on a small scale. Many of these little plots are models of neatness and care; but others show symptoms of neglect. You see, boys are not all alike. At some future time I may describe the interior of this group of factories, for I had a warm invitation to do so.

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* During that special piece of music I thought again of the young minister's prayer—see page 483.

OUR HOMES,

BY A. I. ROOT.

Jesus answered and said unto him, Verily, verily, I say unto thee, Except a man be born again, he can not see the kingdom of God.—JOHN 3:3.

The matter that is in my mind to-day, dear friends, was suggested by the following letter:

> I love the philosophy of GLEANINGS. Knowledge is power. Your success in bee culture is the measure of your wisdom in that line, and it is great; it is good. I love Nature. Nature is truth. Any thing not of Nature is not true. The theology of GLEANINGS I do not believe in, because I can not ignore all Nature and believe a dream. The story of Christ is unnatural, and begins with a dream, consequently is not true.
>
> Church and state ought to be separate, so had business and religion. The story of Christ contradicts itself as well as contradicts Nature. Notice how your text in GLEANINGS, May 15, contradicts the character of Christ given in other parts of the New Testament as being humble, meek, merciful, etc. Matt. 10:34, "Think not that I am come to send peace on the earth. I came not to send peace but a sword." Then read the 35th verse. Dear me! how can I believe such to be the word of God? SAMUEL CLOUGH.
>
> Ellston, Ia.

Friend C., I thank you for your very kind words in your opening paragraph; but your next sentence makes me feel sad, particularly as it is very much in the line I was in the habit of talking before I accepted Christ Jesus as the Son of God and the Savior of the world. I too, dear brother, love Nature. When somebody asked me, "What is the most important thing in succeeding with bees, strawberries, and other rural industries?" I replied that the most important thing to my mind was to *love* the things in question. The successful strawberry-grower should love the strawberry-plant and every thing about it—its thrifty foliage, its beautiful white roots, its enterprising runners, and its strong disposition to perpetuate itself and to make plants—as well as to love the beautiful fruit it gives us. Such a love is right and proper; and when it comes from loving God, the great giver of *all* these gifts, it is far better still; and in one sense I admit that Nature may return this affection. The things we love, thrive and prosper, whether it be bees, a calf, a colt, or a strawberry-plant. In one sense Nature seems to respond—at least in a certain way—and return the affection we lavish upon her creatures. But Nature is nothing, or comparatively nothing, without humanity. Nature of herself is hard and unfeeling. I once saw a comrade drowned before my eyes. After he had gone down for the last time the water rippled over the place where he disappeared, as if nothing at all had happened. Nature was so unfeeling, and so oblivious to the tragedy that had just been enacted, that it seemed horribly cruel and unfeeling just then. No human being was near. I was alone with the dead, for I knew he must be dead before help could be obtained to rescue him. Nature cares nothing for our woes.

Again, Nature makes no progress. It is unnatural to milk our cows, to make butter or cheese; for Nature must be diverted from her natural channels in order to do this. If I worship Nature to such an extent that I disdain human progress, I should have to lay aside my spectacles; and I have sometimes tried to imagine what a helpless creature I should be without my glasses, especially when I go to church and happen to leave them in my other suit.

You say Nature is truth. I admit that Nature does not tell falsehoods; but neither does she tell us *any* thing, or comparatively nothing, without artificial aids. How much progress could we make in astronomy without these artificial helps?

When we feel disgusted about the hypocrisy and cheat that we sometimes see among men, I know how natural it is to turn to Nature; and I know, too, how the feeling comes that leads us to say that in Nature there is no hypocrisy. But, dear brother, if there were not a possibility of falsehood you could hardly have a fair conception of truth. After we have been forced into the companionship of a man who is so much in the habit of telling lies that he uses falsehood when truth would do a good deal better, we are prepared to appreciate a good honest straight man when we meet him. I love Christian people ever so much more after having been obliged to be in the company of those who profane God's holy name. When Robinson Crusoe was on his island, and saw no human beings at all, his companionship was entirely with Nature. He met nothing but "truth" then, as you put it; and yet we know how gladly he welcomed a human being for a companion, even though this human being was a heathen and a cannibal. Humanity is often bad, I grant you; but I think it is a thousand times better than no companionship at all. People during all ages have made the mistake of thinking they could be better by holding aloof from mankind. The Bible, however, gives us no encouragement for any such way of living. When Jesus left this earth he prayed for his disciples. Now, he did not pray that they might be kept entirely from evil men, or, if you choose, from falsehood and deceit. He said, "I pray not that thou shouldst take them out of the world, but that thou shouldst keep them from the evil." If we are to be the "salt of the earth," we must be all around among the people, in order that we may meet and put down fraud and untruth.

The theology of GLEANINGS is probably very far from being perfect; but surely, dear friend, it does not *ignore* Nature; in fact, I believe it is because it has been so devoted to Nature and Nature's gifts that it has received the support and patronage it has. Perhaps I have not touched directly on the matter of dreams; but you know how severe GLEANINGS has been in its criticisms of all superstitions; and a faith in dreams would, in my opinion, be superstition and nothing else; but for all that, I can by no means doubt that God might, in past ages, have used dreams as a means of conveying his will to man. The steam-engine and telegraph are nothing but dreams realized. No human being can tell just how how much the mind of God is reflected in suitable human minds. You say the story of Christ is unnatural, and I agree with you. It is an abrupt departure from nature—that is, from what is usual. I once held just about the ground that you do. Full well I remember the day when the truth you have partly expressed burst upon me. The little text, "Love ye your enemies, do good to them that hate you," was by accident brought prominently before me when I was a busy business man a little more than thirty years of age. As I attempted to go on with business I pondered the matter. What an idea to be intruded into the world of business! Why, it is the most unnatural thing anybody ever heard of, to *love* his enemies. Think of loving a man who puts himself out of the way to injure you!

Not many hours ago a man dropped a box containing two cans of beautiful honey. Now, I do not know for sure, but I rather suspect he tried to break it and let the honey run all over the floor because he was mad He was vexed because he could not have his own way. You have seen people like this, who would purposely damage people or property because they were ugly. Now, if you choose, let us consider loving a man who purposely and deliberately does a thing of this kind — wastes your nice honey and spoils property scattered about on the floor. It is contrary to Nature, is it not?

A poor boy in the jail once said to me something as follows: "Mr. Root, it is agin Nature to love a man who purposely does you a mean turn." He had it exactly. These words and others of a like kind were not spoken by humanity. In talking about the matter before I became a Christian I said to my mother, "As I think over these words, 'Love ye your enemies, and do good to them that hate you,' somehow it impresses itself on my mind that they came from heaven and not from earth." They are the words of God to his children, and not the words of any human being.

You say the story of Christ is "unnatural," and, consequently, not true. When Dzierzon first proclaimed the natural history of the bee, the whole world said it was "unnatural," and hence not true; but they were finally compelled to admit that the theory was true, and then, and not before, they admitted the teachings were in accordance with Nature's laws. The story of Christ is, I believe, universally accepted now; at least, millions of our most intelligent and scholarly men accept it—so universally, at least, that it is a long while since I have heard anybody dispute its truth. When we date our work every day *anno Domini* (year of our Lord) 1898, we simply acknowledge it is so many years since Christ was on earth; and, if I am correct, *every civilized nation on the face of the earth now so dates its writings.* When you say church and state ought to be separate, I suppose you mean that religion should not be used as a lever to push business enterprises, or that the priest or minister of any particular church should not have power invested in him to push or hold back political machinery, and I entirely agree with this. But you should remember that the church never sought union with the state, and has now almost entirely disengaged itself from the use of secular power. Only very bad men have tried to govern in religious matters through the agency of human government. You may thank the church itself in this country that you are not taxed to support it. In Turkey, the government would tax you half of all you earn to support the church of that country. Perhaps you would call that "unnatural," and, hence, not true; but the reality would be very stern. Still, I do think the pulpit should be using all the influence it can summon to enforce *righteous* laws, and that the *laws* of our land should protect our people in worshiping God according to the dictates of their own consciences. The laws of Moses and the laws that are being enacted now throughout the world for the protection of our people certainly run along in parallel lines.

I thought in my talk to which you referred, where I quoted Jesus' words, "I came not to bring peace on earth, but a sword," I made my meaning plain. Every little while some person, or perhaps some sect or denomination, comes up, carrying moral suasion so far as to say that it is *wicked* to fight or to have war. Not a week ago I had a little talk with a very good old man who said the denomination to which he belonged did not permit him to fight. Said I, "My good friend, if a lot of drunken burglars and highwaymen were to break into your house at night, would you not fight for the sake of your wife and children?" He shook his head, and said his people were not allowed to fight, even under such circumstances. Now, I can imagine that a quiet and peace-loving old man like himself might choose to let the ruffians have all his money, and let them go away quietly, rather than to undertake to shed blood. It would be a question with many people whether it is worth while to undertake to kill the midnight assassin, to save property; and one might even let the ruffians pound him (personally) to jelly rather than strike back.

I would gladly stop here, dear friends, and not go any farther; but you who are in the habit of reading the newspapers know that is not all of it by considerable. These desperadoes who break into houses because they have reason for suspecting there is money there, are usually crazed with drink. They are not human beings—they are wild animals. Now pardon me if I hold up before you what has been enacted many and many a time of late in different parts of this country. Suppose these devils in human form should presume to lay violent hands on you wife or daughter; will you still say you can not lift a hand in their defense because of your religion, and at the same time you claim to be a *man* in the highest sense of the word? What would become of us if there were no man among us ready to sell his life, and sell it as dearly as possible, in defense of the home and family?

During the war that is just now upon us, our brave men are not all fighting for their wives or their daughters; but, thank God, we are showing a higher type of Christianity *still* in fighting for the women and children of poor outraged Cuba. Now, dear brother (for such I prefer to call you, although I must think you are a greatly mistaken one), can not this man who defends his wife and children, as every father is expected to defend his own—can not this man at the same time be "humble, meek, merciful," etc.? These terrible scenes of the invasions of homes by drunken men have been enacted in our own neighborhood; and if a party of masked men should beat in our door, as we read about in our papers, I should pray God to give me strength and skill to beat the brains out of one or more of them if I could; and if he answered my prayer I would go down in thanksgiving and praise to him for having *heard* that prayer.

Now, God forbid that I should utter a sentence like the above, and stop right there. Whenever I read of one of these outrages I feel more and more the importance of pushing all sorts of missionary work. I feel more like helping our churches, Sunday-schools, Endeavor Societies, Young Men's Christian Associations, and last, but not least, the Salvation Army; and I feel, too, in view of the fact that strong drink is always back of it somewhere, that our *Ohio* Anti-saloon League and our *National* Anti saloon League should have men and money to back up their work. I feel, too, that we fathers and mothers should see to it that our laws requiring children to be in school should be more rigidly enforced. Let the truant-officers know we are back of them. We are each and all to blame for letting criminals *grow*. Instead of killing them off as fast as they appear (as we do the potato-bugs) we want them to grow up to be *God-fearing men and women* instead of anarchists and foes to society at large, as is now too often the case. So far I have had but little to say in regard to the text at the head of this talk. Our good brother asserts that Christianity is "unnatural," and I have partly agreed with him; but the natural man is a brute, or worse than a brute. In different parts of the world where people, under force of circumstances, have grown up without Christianity or education, we find them heathen and cannibals. A cannibal is, if you choose, a natural man, or a man who has grown up with no teacher but Nature. Jesus said to Nicodemus, and with much force, "Except a man be born again, he can not see the kingdom of God." The little text about loving your enemies and doing good to those who hate you was instrumental, among other things, in opening my eyes to something that is not *Nature*, or, in one sense, that is not *Nature's* law. I got a glimpse in that little text about the new birth, and from that day to this (some of my readers doubtless remember the time) I have been untiring in teaching, wherever people would listen to me, this new birth that comes from heaven and not from earth. I have been untiring in pointing mankind to the Lamb of God that taketh away the sin of the world.

Dear brother, that 35th verse of the 10th chapter of Matthew to which you refer is only to remind Christ's followers that he who wishes to be a Christian in the best sense of the word must choose Christ *first*. In fact, Christ should stand *before* father, mother, or any other earthly tie In other words, a man must do *right* as God and his own conscience tell him what right is, even if it breaks up the dearest of family ties. Or, to make it a little plainer, let me tell you something of my own experience: Two neighbors quarreled about a line fence. One shot the other. But the man who did the shooting had a brother who was well to do, but he was a Christian man. Now, should this Christian man use his money to screen his brother, or try to keep him out of the penitentiary, when he had deliberately transgressed the law? Should a Christian man use his money to screen his own brother from a just and deserved punishment? This thing meets us almost continually at the present day. We have lynchings because people say the laws are not enforced. The reason the laws are not enforced is because the criminal has wealthy friends or relatives; and the lawyers openly declare they will get a man out of his trouble (no matter about his guilt) providing his friends have the *money* to do it. Now, if one wants to be a *man*, and *manly*, in the best sense of the word, which shall he love most—*right doing*, or, if you choose, *righteousness*, or father or mother, or son or daughter? Then our Savior adds, "He that taketh not his cross and followeth after me, is not worthy of me." And he says again, "He that will find his life shall lose it; and he that loseth his life, for my sake, shall find it."

Dear brother, let me, in closing, ask you if the truths of the Bible as I have presented them are not infinitely more grand and ennobling than the bare *unfeeling* truths that you find in Nature.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

OUR STRAWBERRY REPORT FOR 1898.

Darling and Earliest are both extra early; but like their parent, Michel's Early, they are shy bearers. A year ago I was misled in the matter because we had a few plants of the Darling that gave a great lot of berries; and this is true even now. By picking out certain plants, and putting them in a bed by themselves, I could make a wonderful showing of the Darling. Not one in four gives a good yield, and, like the Gandy, quite a few plants do not give even a single berry the first season. If you want to catch the very earliest market, these are all right; but the yield is small, and they will be gone entirely when other good berries are at their best.

Carrie is certainly an improvement, both in size and firmness, on its parent, the Haverland; but at present we are not sure that it is as great a yielder as the Haverland.

The Nick Ohmer is all I have claimed for it, but I am afraid it will not give us as many bushels as some of the smaller ones do.

Margaret is much like the Nick Ohmer, but not of as good shape.

The Marshall is a splendid all-round berry. It is fairly productive, commences ripening with the earliest, and holds out to the latest. In color and shape it is equal to almost any thing we have.

Brandywine is a beauty; and for hill culture it is about the handsomest plant, when you consider both foliage and berries, of any thing I ever saw. The shape is fairly good, the color is perfect, and it is the firmest berry by all odds I have ever had any thing to do with.

The Wm. Belt is a good companion to the Brandywine. It is a little earlier, but not of quite as good shape. Both are splendid yielders.

Of the newer berries that I have not reported on before, we have two worthy of mention. I would call special attention to the Clyde. The berries are large and fine, the plants are strong and thrifty, and just now I should call it the largest yielder of good-sized berries of any thing I have ever come across, not excepting our old friends Beder Wood and Parker Earle. The Clyde is certainly an acquisition; but, like other great bearers, it must have plenty of manure and plenty of water.

The Star is a strong grower, and resists drouth remarkably well, as has been claimed for it; but otherwise it is so much like the Sharpless (only it is not as sweet) that I don't know but I might mistake one for the other.

The Louis Gautier, the French berry introduced by our friend Goldsborough, is a large beautifully shaped berry, almost white. I was showing our pastor through the new strawberries yesterday; and when I handed him one of the Gautiers he remarked, "But would this new berry sell on the market, with its color so nearly white?"

"Taste it, please, and then answer," I said.

He took a bite from the berry, and then, with a smile, replied, "Oh! I take it all back—I take back every word of it. This would sell anywhere if one just got a taste of it."

The berry is of large size, as round as a peach, and pretty nearly white, with the exception of a peach pink on one side—sometimes a little pink all over; and the funniest part is, it has a distinct peach flavor. I am afraid it is not going to bear very many berries, however; but I have tested it only in a raised bed, and for the past two weeks we have had scarcely a drop of rain, so our raised beds are all suffering.

By the way, I have demonstrated this spring, as I never saw it demonstrated before, that you can have a paying crop of strawberries from a piece of ground where a crop of something else has been removed as late as September. Put out your plants with the transplanting-machine I have figured, then give them perfect cultivation, working in manure in abundance, and in nine months from the time the plants are put in the ground you can harvest a paying crop of beautiful fruit.

June 13.—Our drouth of two weeks has been broken by repeated thunder-showers until the strawberries and every thing else are now just booming. But business is also still booming, and every man and boy available has been crowded into the saw-rooms, packing-rooms, or somewhere else to help get off orders. The strawberries are ripening grandly, but everybody is wanting vegetable-plants just now, and Frank and George have not a minute to spare to pick the berries; and for almost the first time in my life I am short of help, and there is none visible—that is, none I should want to trust among the plants and berries. The price has gone down to 5 and 6 cents; but we still get 7 cents for choice ones. To-day being Monday I thought there was going to be an oversupply; but by a little looking around I managed to engage most of them; but just now, at 3 P. M., the women are all ready to do the canning, but the berries are not picked, and there is nobody to pick them. I got tired of working in the office, and told one of the boys I would pick berries for a while, and I actually did pick four quarts. I enjoyed doing it, because it gave me an opportunity to test the yield of the new and old varieties. And which one do you suppose pleased me most in my picking? Inasmuch as I have been accused of always wanting something new, I feel a little pleased this afternoon to give my testimony in favor of our old tried friend the Bubach. There is this thing I like about it: Whenever you see a good strong plant with plenty of big leaves you may always be sure there will be great luscious berries to match; but on a great many other varieties, you find every little while a plant with a great mass of luxuriant foliage and *not a berry*. This is especially true of our new friends Darling and Earliest, and it is also true of our old friend Gandy. But the Bubach, with its rich dark-green foliage, never disappoints you. The berries are a little soft, and the plant is imperfect; but otherwise I believe the Bubach justly stands at least pretty nearly shoulder to shoulder with our best new kinds. If there is one that is ahead of it for an all-round berry, it is, perhaps, the Brandywine. This is perfect, furnishes lots of berries, and yet they are about as firm to ship or can as any berry known. I was also greatly pleased with the Sharpless, another old friend that has been "tried and true." I believe it is the best berry to eat out of hand of any thing the world has yet given us. Jessie compares very favorably with it; but the Jessie does not always behave well in all localities.

Our plantation as it is cultivated in three different directions, which I have described, is now a thing of beauty, and bids fair to be a joy for —— two or three years; at least if we keep the runners off and keep it cultivated. Of course, it is a job to mulch the berries so as to keep them out of the mud during a thunder-shower. We have been doing it with rye cut while the grain is in the milk. We have also tried the green grass. None of these things answers quite as well, however, as straw put on thick enough so the dirt can not even spatter up and spoil the berries.

While calling upon Mr. Nick Ohmer he said that the strawberry named after himself was originated by a veteran strawberry-enthusiast. I obtained his address, and wrote him, sending him a sample of our method of potting plants in jadoo. Below is his reply:

Mr. A. I. Root:—GLEANINGS and the Darling strawberry-plant were received. I never saw a plant shipped in as nice condition, and with such extra large roots, as the Darling. I do not know whether I can pot plants and send them in such good condition; however, I will try to send you a few plants of the numbers named. I never sold any plants or berries, but have sent many plants to friends and others. I sold my ground a year ago, where I grew berries for 26 consecutive years, and very many fine ones. I now have only the east end of a forty-foot lot, and occupy a place of, say, 35 feet by about 60 in berries; but it is astonishing to see what can be grown on a patch of that size. I am very glad to hear that you are meeting with a "happy surprise" in the Nick Ohmer. Your description of its foliage is correct, only I find some have five leaves on a stem. With me they have an abundance of fruit, and, when properly ripened, the quality is A No. 1.

I kept the runners off all along, and it will be some time before I can send you the plants. I am nearly 72 years of age, and must soon quit, although I have great delight in raising new seedlings. I have some of the Nick Ohmer and some of the No. 34, which are very nice. The seed was sown in pots about Christmas, and kept in the house. From one of No. 34 I have picked off four runners. I thought I could get it to bear this season; but I notice it is starting new runners. If they get strong enough I will pot one for you for its beauty of plant. JOHN F. BEAVER.

Dayton, O., June 13.

From a newspaper clipping forwarded me by Mr. Beaver I take the following:

Mr. Beaver said one cause of failure in strawberry culture in a dry season was insufficient mulch around the plants to keep the soil cool and moist. The soil on his strawberry-beds was so wet that he had to protect his knees against the moisture while gathering the fruit, and all this without irrigation—simply plenty of good mulching. Mr. Beaver showed four plates of strawberries of such unusually large size and fine color as entirely to dispel all doubts as to the correctness of his mode of culture.

SLOT MACHINES FOR CHURCH FAIRS AND OTHER ENTERTAINMENTS.

One of our clerks handed me a catalog of new inventions in the line of slot machines; and there is one particular one that he thought would interest me especially. It is a hen on a nest, covered with real feathers, and a hen that can cackle; but the only way to make her cackle is to drop a nickel into the slot. Now, this is all very good, and not at all objectionable so far as the cackling is concerned. But this same hen lays eggs, and these eggs are prepared full of candy, chewing-gum, chocolates, and other dainties; so when you drop a nickel into the slot you not only hear the hen cackle, but you get an egg for your five cents, containing confectionery. Well, *this* is not very bad; but to make it wonderfully taking, one egg in a hundred contains a gold ring: This is supposed to be the "golden egg." The catalog declares the apparatus is specially desirable for "picnics, church fairs, and other entertainments." I have not a bit of doubt that this automatic hen, with her golden egg, would take in a vast number of nickels; and on the whole I rather think it is a good thing, perhaps, even for church fairs and festivals, providing the hen would cackle loud enough to arouse the consciences of Christian people, especially when the *gambling mania* begins to get a foothold in the church of God.

My house shall be called the house of prayer; but ye have made it a den of thieves.—MATT. 21:13.

A MISSIONARY WAR.

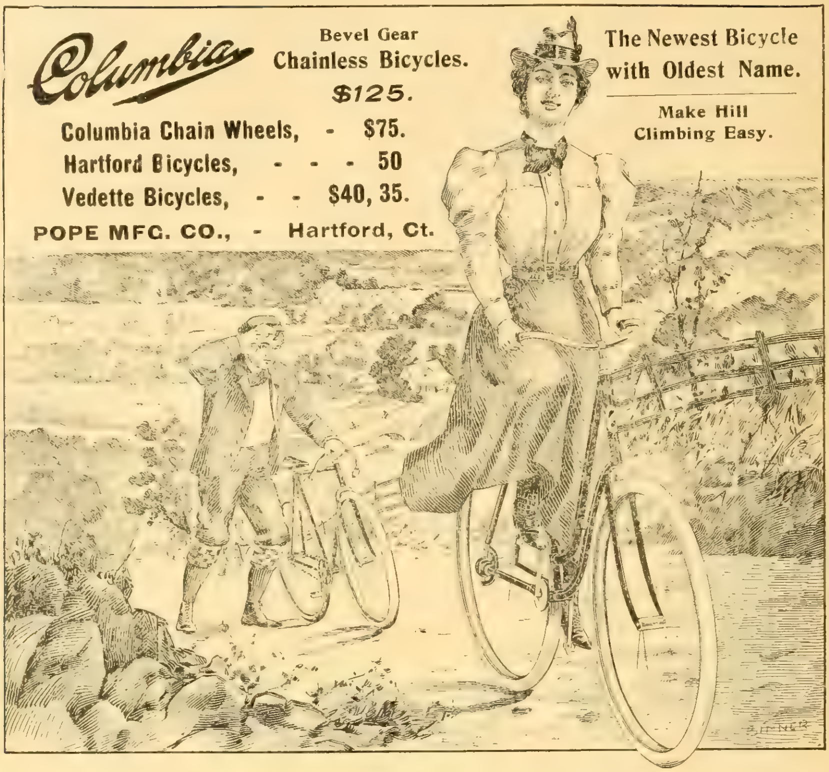
Our pastor said recently that our trouble with Spain is a missionary war. We are not fighting for more territory nor for more conquest. We are not fighting for self, but for the starving and much-wronged Cubans. And who shall say that the Spanish nation itself may not by this war be lifted out of the degrading superstitions of three centuries ago which still cling to it, and be forced by the logic of events to ally itself on the side of perfect political and religious liberty, to which she has always shown herself to be so implacable a foe?

Special Notices by A. I. Root.

In working the strawberry-plantation shown on page 407 of our May 15th issue, I mentioned using a three-tooth wheel-hoe. Well, this hoe does the business all right; but there are some weeds, like grass and dandelions, that must be cut off with something like a hoe. For this purpose we have just received from the manufacturer, Mr. G. W. Cole, of Canton, Ill., a sort of scuffle-hoe that runs just under the surface, and cuts off the weeds mentioned, and also reaches up under the foliage of the plant so as to get any weed without injuring the leaves or blossoms at all. In fact, one needs to be a little careful or he may run the steel blade so close as to cut the plant. For prices and particulars regarding the above wheel-hoe, address Mr. Cole as above.

THE PAPAYA (OR MELON) TREE.

The supply of seeds I brought from Bermuda for free distribution was exhausted in a very few days. I had no idea so many of the friends would want to try a tropical hothouse plant. I sent at once, however, to Mr. Morrison, and he promised to get me some more seed by the next steamer; but I learned that Mr. Baker, who owns this special variety, has been sick, and was unable to gather and dry the seed. I suppose it will come a little later on. I am very sorry indeed to keep so many of the friends waiting for seeds that I really expected would go by return mail. We have saved your stamped envelopes, and will send you some seeds just as soon as possible.



Columbia Bevel Gear Chainless Bicycles. $125.

Columbia Chain Wheels, - $75.
Hartford Bicycles, - - - 50
Vedette Bicycles, - - $40, 35.

POPE MFG. CO., - Hartford, Ct.

The Newest Bicycle with Oldest Name.

Make Hill Climbing Easy.

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A Good Wagon

begins with good wheels. **Unless the wheels are good the wagon is a failure. IF YOU BUY THE ELECTRIC STEEL WHEEL** made to fit any wagon—your wagon will always have good wheels. Can't dry out or rot. No loose tires. Any height, any width tire. Catalog free.

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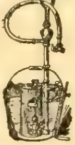

SPRAYING

with our new **KEROSENE Sprayers** is simple. Kerosene Emulsion made while pumping. Send for photo. of our NEW PEERLESS ORCHARD SPRAYER, with BORDEAUX NOZZLE, the WORLD'S BEST.

THE DEMING CO. SALEM, O.
West'n Ag'ts, Henion & Hubbell, Chicago.

In writing advertisers, mention GLEANINGS.

Don't Monkey with Cross Bees.

Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Tested, in May, $1.25; untested, 75c; 3 or more at $1 and 65c each. Send for 40-page catalog, information to beginners, etc., free.

A. I. ROOT CO.'S GOODS KEPT IN STOCK.

JNO. NEBEL & SON, HIGH HILL, MO.

In writing, mention Gleanings.

Dollar Eggs? Yes, after June 1st we will sell all eggs at half price, $1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmas, Langshans, White Wyandottes, Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

Headquarters for Poultry Supplies.

Send for our book, "Everything for the Poultry Yard," (14th annual edition); eighty 6x9 pages; finely illustrated; full of information; you want it; it's free. Address

Geo. J. Nissly, Saline, Mich.
Established 15 years.

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FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by

Emerson T. Abbott, St. Joseph, Mo.

Write for *free sample copy now.*

Ready! Stacks of queens reared under most favorable conditions from either three-band or golden strains, *warranted* at 60c each; 6 or more, 50c. Free circular. Am member N. Q. Breeders' Union.

J. B. CASE, Port Orange, Fla.

ITALIAN QUEENS. Untested, 50c; thirteen, $6.00; tested, 75c each; six, $4.00. I have nothing but Italians in my yard, and mismated queens are rare at this time of year. Safe arrival guaranteed. Send for circular to

W. J. FOREHAND, Fort Deposit, Ala.

Don't Buy Supplies

For 1898 until you see my 38th Annual catalogue. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

The A. I. Root Co.'s Goods, at their Prices.

Parties desiring these goods can get them of me, and **save freight charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page Illustrated Catalogue free. Address

W. W. CARY, Lyonsville P.O.,
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In writing advertisers, mention GLEANINGS.

"Watch Pouder's ad"

SEE THAT WINK?
BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

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Fruit Packages of All kinds,

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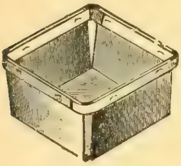


BEE-KEEPERS' SUPPLIES.

Order your supplies now before the busy season catches you. Price list free. Address

BERLIN FRUIT-BOX CO.,
Berlin Heights, Erie Co., Ohio.

In writing, mention GLEANINGS.

Prosperity

It is here, and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
FREMONT, - - - - - MICHIGAN.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS. Lisbon, Texas.

Michigan Headquarters

for G. B. LEWIS CO.'S SUPPLIES, DADANT'S FOUNDATION, every thing needed in the apiary. Send for price list to

L. C. Woodman, Grand Rapids. Mich.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

FOOD VALUE OF HONEY.
WHY IT SHOULD BE EATEN
WE ARE THE BUSY BEES THAT GATHER HONEY FOR THE FRISBEES
LAWN HIVE
SECTIONS
HONEY-COOKING RECIPES
NOVICE HONEY EXTRACTOR

Wanted, all the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa Clover Honey Cough-drops and their 48-page illustrated honey-recipe book, "Food Value of Honey," with lithograph cover. All mailed for 10 cents in stamps.

R. K. & J. C. FRISBEE, Pub.,
Box 1014. Denver, Col.

Reference A. I. Root.

In writing, mention Gleanings.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

Cash for beeswax. **M. H. HUNT, Bell Branch, Mich.**

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

IF YOU WANT

Your orders for untested Italian queens to be filled with the **best queens** and by **return mail** send to

J. W. K. Shaw & Co., Loreauville, La.

Untested, 65 cts.; $7.00 per dozen. Tested, $1.00; $10.00 per dozen. Every queen warranted. Send for price list.

Queens from Natural Swarming Cells

by return mail, from the queen specialist, Jas. Wood.

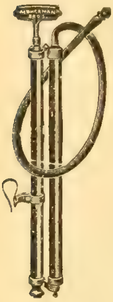
All queens are young and laying. I warrant them purely mated, and guarantee safe arrival as in the past 13 years. These queens are the light 3-banded strain that have proved best with me. Address

JAMES WOOD, - NORTH DANA, - MASS.

SPECIAL NOTICES BY BUSINESS MANAGER

NINE-INCH CIGAR-BOX PLANER.

We offer for only $30.00 a cigar-box planer 9 inches wide, which opens for stuff ⅝ thick or less, to $\frac{1}{16}$ if desired. It is in good condition, and was used for planing sections. It is just the thing for smoothing very thin stuff, and is a bargain at the price to any one who can use it.



MOHERMAN BRASS BUCKET SPRAY-PUMP.

In order to close out our stock of these pumps we offer them from now on at $2.00 each, or 3 for $5 00. They will do nicely for arresting swarms as well as for spraying trees, and are very cheap at this price.

YOUNG AMERICA LAWN-MOWER.

We have been receiving quite a number of orders for these machines of late. We have only a few of them left, and they can not be replaced for three times the price we are asking to close them out. Ten-inch, $1.00; 12-inch, $1.25; and we have one only 14-inch at $1.50. If you want one, order soon.

HIVES OF ALL KINDS.

Orders have not been coming in in very large volume so far this month, and we are rapidly gaining on orders. As we write we have very few orders on hand over three weeks old. Our oldest orders are for hives and special goods; but at the rate we are now turning out hives we ought, during the next two weeks, to be pretty well caught up. Certainly we shall not be more than about a week behind by July first, at the present rate of gain.

SECTIONS IN STOCK.

We still have a supply of No. 1 4¼x7-to-foot sections ahead of orders, though they are dwindling fast. We have also No. 2 4x5x1⅜ plain. Of all other regular sizes listed in catalog we are sold ahead, though we are now not more than about two weeks behind on section orders, and gaining. Many orders are filled in less time. We were disappointed in getting a car of sections from Wisconsin, or we should have been closer up on section orders by this time.

PREPARATIONS FOR NEXT SEASON.

We are placing an order for a large engine with a capacity of 500 horse power at full speed and load, and are having plans prepared for a new building three stories and basement, having a roof area of over one-fifth of an acre, or 60x150 feet, the largest of any of our buildings. This will be an addition to our present wood-working building, which is 44x96. We are going to try hard to get ready for the orders that want to come our way.

BEESWAX DECLINED.

We now have on hand a sufficient stock of beeswax to complete our orders for the season with what little will naturally arrive; and as the price has been abnormally high for a few weeks, owing to the heavy demand, it is bound to go down fully five cents a pound or more within a month or less. We therefore drop the price we pay to 25 cts. cash, 27 in trade, for average wax delivered here on all arriving after this date, unless already contracted for at a higher price. We may have to go still lower next month; but this is a rather large drop all at once.

COMB FOUNDATION DECLINED.

We drop the last advance made in comb foundation May 23, and leave the price for the present at the rates fixed April 20. This is the price printed in our catalog dated May 1, 1898, and three cents above the price printed in catalog of January, 1898. We have a stock of twelve to fifteen tons of wax, most of it bought at high-water mark. While we have a good many orders for foundation on hand because it goes with other goods, we are in shape to supply foundation orders by return train. Chas. Dadant & Son, Hamilton, Ill., also decline the price 2c a pound, to correspond with our price.

CARLOAD SHIPMENTS.

Since last issue we have shipped a car to Jno. Nebel & Son, High Hill, Mo. Two cars have gone to Jos. Nysewander, Des Moines, Iowa; two to our Chicago branch; one large car to L. A. Watkins Mdse. Co., Denver, Colo. We are loading one for St. Paul branch and another for Walter S. Pouder, Indianapolis. Two more cars go to Jos. Nysewander, Des Moines, Iowa, within the next week or ten days, and another car to our Syracuse branch. Our Philadelphia branch has plenty of hives for prompt shipment, and most other goods except sections. They will have these within the week.

DRAWN FOUNDATION WITH NATURAL-BASE CELLS.

We are finally ready to anuounce that we are prepared to furnish in small quantities the drawn foundation with natural bases. The bases are as thin as natural comb, and the walls are about ⅛ inch high in foundation, weighing the same number of feet to the pound as ordinary thin super foundation. The size of the pieces we are prepared to furnish is 3⅜x4, or we can make them 3⅜x4½. The dies will soon be completed to 4½ inches square. Until they are, we send pieces 3⅜x4 inches. It is not too late yet this season to test small lots of this foundation. A package of 3 pieces will be mailed for 10 cts.; 10 pieces for 25 cts.; ½ pound for $1.00. This may look to some like a high price; but you must remember that Mr. Weed has expended considerably over a thousand dollars in experimenting, and is not even yet prepared to supply it in commercial quantities. What we sent out last season had flat bases; and because of that fact it proved objectionable. It has been a much more difficult feat to accomplish the production of this drawn foundation with natural bases, and it is well worth the price asked for these sample lots just to see what has been accomplished.

WIRE NETTING FOR PEAVINES, ETC.

We have a few odd rolls of wire netting, such as we have kept in stock, not the Climax brand put upon the market this year. In order to close it out we offer it at the following special prices:

10	rolls	3-in.	No. 18	netting,	18 in.	wide,	$ .90	a roll.
8	"	"	"	"	24 in.	"	1.20	"
2	"	"	"	"	48 in.	"	2.40	"
7	"	2-in.	No. 20	"	18 in.	"	.90	"
1	"	"	"	"	24 in.	"	1.20	"
4	"	"	"	"	30 in.	"	1.50	"
2	"	"	"	"	36 in.	"	1.80	"
1	"	"	"	"	42 in.	"	2.10	"
9	"	"	No. 19	"	12 in.	"	.60	"
2	"	"	"	"	30 in.	"	1.50	"
2	"	"	"	"	36 in.	"	1.80	"
1	"	"	"	"	42 in.	"	2.10	"

Rolls are 150 feet long; and the price, you notice, is about 10 per cent lower than Climax, although to buy the goods new would cost us about 10 per cent more. These prices are offered merely to close out stock on hand here. Same discounts for quantity apply; namely, 5 per cent off on 5-roll orders, or 10 per cent off on 10-roll orders. Shipments from here only, and subject to stock being sold. We have a supply of all widths of Climax netting on hand for prompt shipment. There is nothing better or cheaper than this narrow netting for peavine trellis, or any other garden plant requiring something for the vines to climb on.

SPECIAL SALE AT BALTIMORE, MD.

We have on hand at Baltimore, Md., in the hands of the Rawlings Implement Co., the following goods which we offer, to close out quickly, at the special prices annexed. Orders may be sent to us or to the Rawlings Imp't Co. direct. Some of the goods are old-style, made several years ago, but to many they will answer the same purpose as the latest make If interested, and you desire further particulars, write—remembering, however, that, at the prices we have set on the goods, they are likely to go off quickly, and they can not be duplicated at these prices:

300 thick-top brood-frames with top-bar 19$\frac{1}{16}$ long, $1.25 per 100; $3.50 for lot.

700 all-wood frames, same as we now list, $1.10 per 100; $6.50 for lot.

200 half-depth wide frames to hold 4 sections, 4¼x1⅞, $2.50 for lot.

5 Lareese bee-escapes, same as we formerly cataloged, 25c each; $1.00 for lot.

5000 two-pound sections, 5¼x6¼x1⅞. Write for special offer on this lot.

6 boxes of ten 1-gallon square cans with screws, $1.20 per box; $6.50 for lot.

15 eight-frame gable covers for Dov. hives in flat, 15c each; $1.75 for lot.

160 24-lb. single-tier shipping cases for 4¼x1⅞ sections, no glass, nails, or paper, $9 per 100; $13 for lot.

10 12-lb. shipping-cases without glass, 75 cts.

90 Dovetailed winter-cases, in flat, 50 cts each; $4.50 for 10; $37.50 for lot.

1 comb-bucket, $1.00.

2 Hubbard section-presses, at $2.00 each.

30 old-style Alley queen and drone traps, 35 cts. each; $3.00 for 10; $7.50 for lot.

10 pair of hive-carriers, at 15 cts. a pair.

450 plain cartons for 4¼x1⅞ sections, $2.25 for lot.

CHILD TRAINING.

Some months ago we published an essay on the subject of child-training, written by Miss Sarah W. Smith, principal of the Medina primary schools. This was so favorably received at its first reading that there was a general desire to have it read before a larger circle, and it was accordingly given before the parents of Medina. At that time there was a general expression on every side to have it published, as it was felt that it would do a world of good. The result was, it was printed in the Home department of this journal. A thousand extra copies in book form were then struck off. These were taken in such a short space of time that there was a call for more. Finally we decided to get out a newer and better edition, and now have it ready just from the press. The little book contains 25 pages, bound in a tinted cover. As it has already enlightened thousands of parents, we put it out again in this new form so that it may enlighten thousands more. We feel safe in saying that it will be the means through the parents of developing many a child into a higher and better type of manhood and womanhood; and that is not all—the effect of parents will be almost equally great. Many of our readers—most of them, in fact—know something of the pure gold contained in this booklet, and we have thought that many of them would be glad to send extra copies to their friends, and especially to those whose government in the home, through ignorance, is any thing but what it ought to be. The price of the book is 5 cts., postpaid; 12 copies for 40 cts., postpaid.

A KIND LETTER AND A KIND APOLOGY.

Dear Sirs:—Since seeing in GLEANINGS my letter of a recent date I have heartily repented, and most humbly beg your pardon. The letter looks bad in print, and never should have been written. The like will not occur again, as I am fully convinced that you will do the best you can in filling orders, and I shall in future patiently await my turn. E. B. FOSTER.

Oceola, Crawford Co., O., June 9.

My good friend F., I most freely and fully grant you pardon; in fact, I do not see how I can blame you and the other friends, under the circumstances. You say you will patiently wait your turn in the future. Well, dear friend, we are going to try hard so that there will not be any repetition of the sad experience of this past season. We are now negotiating for a 500-horse-power Ideal engine, and we are also planning for a new and larger factory. More than that, we are going to commence, just as soon as this rush is over, to store up goods ahead for another season. I omitted to say in my footnotes, in our previous issue, that the goods had been shipped three days before your letter reached us; so I presume your goods were at hand and in use, even before your letter was put in print. Do not feel bad about the letter, friend F., for it may do us good all round to get the matter fairly and squarely before us, both producer and consumer.—A. I. R.

Donations for the Shawneetown Sufferer.

Please find inclosed one dollar for Thos. McDonald, of Shawneetown. C. V. KINTNER.

Carrollton, Ohio.

I saw Thomas McDonald's case in GLEANINGS. Please find inclosed one dollar, my mite in the subscription list. G. L. HICKS.

Lake View, N. J.

Gentlemen:—Please donate one dollar ($1.00) to the Langstroth monumental fund and one dollar to Thos. McDonald, of Shawneetown, Ills. Charge the same to my account as I have a credit of $4.61 on your books, and oblige C. K. DECKER.

Hanford, Cal., May 26.

Gentlemen:—Inclosed please find $2.75, to be used as follows: $1.00 to renew my subscription; 75 cts. to pay for new subscription for GLEANINGS, to be sent to Mrs. Minnie Palmer, Cloud, Kent Co., Mich ; 50 cts. from Fran Stone, for the Langstroth fund, and 50 cts. from myself for the Shawneetown bee-keeper who is a cripple, and for whom you are raising a fund.

Box 17, Newhall, Cal., May 31. A. M. WARD.

Mr. A. I. Root:—Yours of the 31st, including $52.55, is at hand, and I must say I feel grateful to you and each one of the contributors the same. I had received, prior to this, through *American Bee Journal* and *Progressive Bee-keeper*, and direct to me, $74.70, making a total received to date of $127.25.

Shawneetown, Ill. THOS. MCDONALD.

[We are very glad, friend M., to know that you have received the above amount; and permit me also to thank our bee-keeping friends for having responded so well and promptly to our appeal through GLEANINGS.—A. I. R.]

ITALIAN QUEENS.

Virgin 3-banded, 40c each; 3 for $1.00.

Gardiner L. Ellis, = = Millsboro, Del.

RED-CLOVER ITALIANS

are bees that will work on red clover; are bred for business. One untested queen, 65c; 1 warranted queen, 80c; 1 tested, $1.25; 1 select, $2.00. Queens furnished in season. Send for price list.

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G. ROUTZAHN, Menallen, Pa.

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Theodore Bender, Canton, Ohio.

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I have sixty hybrid and mismated queens for sale at 25 cts. each, or five for $1.00. ALBERT HINES,
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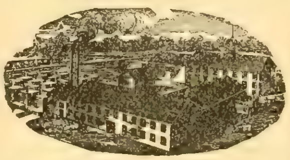

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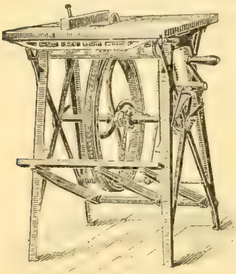

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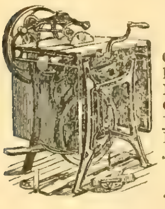

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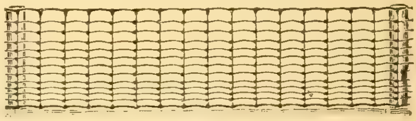

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is not necessary to the peace of stock or safety of crops about which **Page Fence** is erected..

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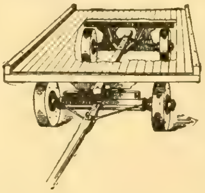

originated with us, and we still sell direct to farmers three fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddlers' wagons. Steel-wheel trucks, $18.

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Honey Column.

CITY MARKETS.

DENVER.—Our honey market is just between the old and the new crop, and is well cleaned up of old stock. We can quote fancy grade of white comb honey at 12½c. It is selling rather slowly as yet, on account of so much small fruit on the market. The demand for our brand of white extracted is still increasing. We could handle a quantity of white at 6c.

R. K. & J. C. FRISBEE,
June 20. Lock Box 1014, Denver, Col.

MINNEAPOLIS.—Fancy white comb, 11c; No. 1, 10½. Extracted, white clover, 6; amber 5; dark, 4. Receipts of both extracted and comb fancy white clover are very light, and now would be a good time to dispose of any yet on hand, and clean up for the new crop. There is a good supply of other grades.

S. H. HALL & Co.,
June 21. Minneapolis, Minn.

DETROIT.—The market is practically bare, consequently it is hard to quote prices. We have some inquiry for new honey, but none is offered. Beeswax in fair demand at 26@27c.

M. H. HUNT,
June 23. Bell Branch, Mich.

BOSTON.—At the present time the demand for both comb and extracted honey is very light, with but little stock on hand. We quote our market: Fancy white, in cartons, 13; A No. 1 white, in glass-front cases, 11@12; No. 1 white, in glass front cases, 10@11; No. 2 white, in glass-front cases, 8@9; extracted white, 6@7: light amber, 5@6; beeswax, prime, good demand, and light supply, will bring 30.

June 20. BLAKE, SCOTT & LEE, Boston, Mass.

MILWAUKEE.—Since our last report we have enjoyed a very pleasant trade in honey. The demand has kept up very well, and market values have been well sustained and all sales have been at satisfactory prices, according to quality and condition of the honey. The outlook for future trade seems good, and we think the old crop will be more closely sold out than usual. We continue to quote fancy 1-lb. sections at 11@12; A No. 1, 10@10½; No. 1, 9@10; No. 2, 8@8½; amber or dark, 6@7. Extracted, in barrels and kegs, white, 5½; dark and amber, 4@4½.

A. V. BISHOP & Co.,
June 21. Milwaukee, Wis.

PHILADELPHIA.—Very little comb honey now in the market; new crop not arriving yet. Extracted, white, 6; amber, 5½; dark, 5. Beeswax, 28. We are producers of honey; do not handle on commission.

WM. A. SELSER,
June 20. 10 Vine St., Philadelphia, Pa.

CHICAGO.—Not any new honey here, and old stock about exhausted. Market values about as last quoted for what little is being done.

R. A. BURNETT & Co.,
June 18. 163 South Water St., Chicago, Ill.

CHICAGO.—Quotations practically unchanged, with trading in comb honey light. Fancy white, 11@11½; No. 1, 10@10½; amber, 7@9. Extracted, water-white, in 5-gal. cans, 5½@6; light amber, 5@5½; dark, 4@5; new southern, 5@6. AMERICAN BROKERAGE CO.,
June 21. Chicago, Ill.

CLEVELAND.—We quote our honey market as follows: Fancy white, 12@12½; No. 1 white, 11; No. 1 amber, 9@10; buckwheat, 8. Extracted, white, 6; amber, 4@5. A. B. WILLIAMS & Co.,
June 18. 80-82 Broadway, Cleveland, Ohio.

NEW YORK.—We closed out all the old crop of comb honey some time since. We received a few lots of new crop from the South, a good No. 1 white honey, which sells readily at 11c. Extracted: Receipts of new crop from the South are large. We quote: Common, 48@50c per gallon; good, 52@55c per gallon; choice, 5@5½c per lb. Demand is good, principally for the better grades. Beeswax remains firm at 28@29.

HILDRETH BROS. & SEGELKEN,
June 20. 120-122 W. Broadway, New York.

KANSAS CITY.—We have several shipments of new comb honey from Florida, the first to arrive in this market this season. The demand is fair at 11@12 cts. The demand for extracted will be light until September. C. C. CLEMONS & Co.
June 21. Kansas City, Mo.

ST. LOUIS.—At present there is but very little demand for comb honey. We quote nominally white comb in 1-lb. sections, 9@10; amber, 8@9; dark, 6@7. Extracted honey, in cans, white, 5@5½; amber, 4½@5; dark, 3½@4; in barrels, white, 4½@5; amber, 3½@4; dark, 3. Beeswax, prime, 28.

WESTCOTT COM. CO.
June 20. St. Louis, Mo.

BUFFALO.—There is so little demand for honey now that the price is nominal at last quotation. There is going to be some honey carried over into the next new crop. Think new white-clover honey will start in this market at about 12@13c; may get a few of the first cases in sold at 14c.

June 16. W. C. TOWNSEND, Buffalo, N. Y.

COLUMBUS.—Honey has about stopped selling in our market, owing to heavy receipts of berries, etc. We quote fancy white, 10@11; No. 1 white, 9@9½.

THE COLUMBUS COMMISSION & STORAGE CO.,
June 20. 409-413 N. High St., Columbus, O.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00; tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

QUEENS
Untested, 40c; 3 for $1.00.
Warranted, 50c; " $1.25.
Tested, 75c; " $2.00.

Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.

CLEVELAND BROS., Stamper, Miss.

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The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

$100

Given as **Bounties** to purchasers of the improved Danz. Hives and Sections. See schedule in my bee-book "Facts About Bees." Tells how to produce honey that sells for the most money. Free for 2c in stamps. Address **THE A. I. ROOT CO., Medina, Ohio,**
or F. DANZENBAKER, Box 466, Washington, D. C.

Select-tested Golden Queens.

Sold at the rate of $8.00 per dozen. A non-swarming and non-stinging strain of bees.
H. ALLEY, Wenham, Mass.

We presume friend Alley means by the above statement, that the strain of bees he mentions are not inclined to swarm or sting.—A. I. R.

ITALIAN QUEENS.

Virgin 3-banded, 40c each; 3 for $1.00.

Gardiner L. Ellis, - - Millsboro, Del.

BEES FOR SALE. I will sell for $4.00 a colony, or $3.50 a colony if more than 50 colonies are taken by one person. The bees are in a strong and healthy condition. I can put them on the Erie; C. C. & S.; or the C. & P. railroad. They are on wired combs.
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Tested Queens, 50c Each,

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W. A. BALDWIN, Artist, Medina, Ohio.

Rare Chance to get Italian Bees, 3, 4, and 5 Band.

Owing to starting two new out-apiaries this spring, and bees working unusually hard and breeding up very fast, we are in shape from now until Sept. 15th (after which we pack our bees for winter) to sell lower than we have ever offered, either three-frame nuclei, or full colonies and tested queens. We do not want to break the trade price, so ask you to write for private figures that will surprise you.

Philadelphia Office
A. I. Root Co.,
No. 10 Vine St.

W. A. Selser.

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Special Offer.

For the next 90 days, beginning July 1st, we will send, by return mail, queens warranted purely mated, at 60 cts. each; ½ doz., $3.00; 1 doz , $5 50. Safe arrival guaranteed. Fifteen years' experience in queen-rearing.
LEININGER BROS., Fort Jennings, Ohio.

Queens from Natural Swarming Cells

by return mail, from the queen specialist, Jas. Wood.

All queens are young and laying. I warrant them purely mated, and guarantee safe arrival as in the past 13 years. These queens are the light 3-banded strain that have proved best with me. Price 75c each.

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New Honey, extracted, white clover and linn, crop of '98, 6c per lb. in 60-lb. cans, f. o. b. cars here. **J. B. Murray, Ada, Ohio.**

WANTED.—To exchange a fine St. Bernard dog and a tiny little rat dog, 4 months old, for offers.
W. S. BRILLHART, Oakwood, Ohio.

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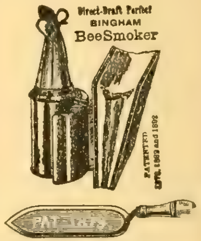
Smoke Engine (largest smoker made.)	4-inch stove.	Doz.	$13.00;	each, by mail, $1.50
Doctor	3½-in.	"	" 9.00;	" 1.10
Conqueror	3-in.	"	" 6.50;	" 1.00
Large	2½-in.	"	" 5.00;	" .90
Plain	2-in.	"	" 4.75;	" .70
Little Wonder (wt. 10 oz.)	2-in.	"	" 4.50;	" .60
Honey-knife			" 6.00;	" .80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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T. F. BINGHAM, Farwell, Michigan.

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With Hints to Beginners.

By C. N. White, of England.

A series of **nine illustrated articles,** to begin in the weekly *American Bee Journal* in July—this month. Subjects as follows:

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ILLUSTRATED SEMI-MONTHLY

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$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. JULY 1, 1898. NO. 13.

STRAY STRAWS FROM DR. C. C. MILLER

P. A. NEWCOMER says alfalfa in Iowa yields no nectar.—*American Bee Journal.*

A SECTION-CLEANER that I hope to see tried is a revolving wire brush with stiff steel wires two inches long.

THE *American Bee-keeper* values staples as spacers at each end of the bottom-bar to prevent killing workers and queens between frame and hive-wall.

THAT BOOKLET on "Child Training" would save lots of heartache if it were put into the hands of every one who has to do with children. I want a dozen copies.

THE *British Bee Journal* says average British clover honey weighs 13¾ lbs. to the imperial gallon, which would be about 11½ lbs. to our gallon; 7 lbs. sugar to 3 of water makes a syrup of the same weight.

REFERRING to p. 478, I don't believe the man lives who can tell by examining a queen-cell whether it's meant for swarming or superseding. But he can easily tell whether it's meant to supply a missing queen.

JUNE 8 I saw two bees on clover-blossoms with *yellow* pollen on their legs. The explanation came when one of them flew on a dandelion blossom, then back on the clover. But it hardly meant that clover was yielding well.

C. DAVENPORT makes a practice of swapping the two outside combs of the brood-chamber for two frames filled with brood. He thinks it helps to keep pollen out of supers, and also to prevent swarming.—*American Bee Journal.*

SENDING SECTIONS BY MAIL seems to be practiced in England, as gleaned from *British Bee Journal.* It would cost too much in this country, and perhaps would not be allowed anyhow. England is ahead of America in some things.

YOU SAY I once had "decimeters square" instead of "square decimeters." It was another man (I can't recall his name, but think he lived down south) who translated from French journals that made the mistake, and I made the correction in Straws. But it's an easy thing to get things mixed. [I'll take it all back.—ED.]

A CASE is reported in *British Bee Journal* in which the bees of a colony fought among themselves day and night, caused, as the editor thinks, by feeding honey from an alien stock. [A case of quarreling of this kind must be very rare indeed.—ED.]

THAT BEE-SUIT mentioned p. 480 I've worn two years with great satisfaction. If you wear the bib pants as *overalls*—excuse me, too warm. If you wear them next the shirt, all right. For constant work you need four pairs unless your folks wash often.

AN ALSATIAN BEE-JOURNAL mentions that, at the request of bee-keepers, a law was passed making it a criminal offense to offer for sale at fairs and markets sweets except under glass, severely forbidding the enticing by sweets and destroying of bees.

HARRY S. HOWE mentions in *American Bee Journal* that he found many colonies this spring that had eaten the honey away from the top-bar, leaving that below. I gave up my skepticism on this point some time ago. Perhaps this will settle Bro. Abbott.

I JUST BELIEVE that 6 square inches of entrance at bottom and 6 more at top gives more ventilation than 24 inches all at the bottom—ventilation *through*, you see. [Ye-s-s-s. But ventilation through the top would be too much of a good thing, would it not, doctor?—ED.]

SOME SAY that nails as frame-spacers make trouble with the wire cloth of extractors. Some say they don't. Perhaps the explanation lies in the diameter of the nail-heads. With a head as much as ¼ inch across, there is no trouble *in this locality*. [But you do not extract much, doctor.—ED.]

JUNE 18. A remarkable month this has been—wet, but especially cool and cloudy. Within a week, killing drones and robbing has been the rule. First clover-blossoms four weeks ago, but no real weather for work on it till yesterday, and I don't know whether there's honey in it. [See editorials elsewhere.—ED.]

WHAT A FARMER can do in the alfalfa regions with a few colonies of bees is shown by the report of Wm. Stolley for 17 years, in *American Bee Journal.* His spring count, running from 6 to 48, averaged 24.7 colonies. His average per colony of extracted ran from 1⅔ to 176⅓, the average for the whole 17 years being 53.6 lbs. The net income per year was $218, or $8.86 per colony. A poorer region, or a larger number of colonies would hardly make such a showing. And not every one could get such a big price for honey.

COME TO GET right down to it, bees do about the same in Medina as Marengo. Sixteen combs, or as many as they'll use up to the time of putting on section supers, then reduce to one story. Say, isn't that about as near contraction as you can come to it? [No, I do not call it contraction. I call it substitution. Why, I do not reduce the hive capacity at all, do I, doctor? I simply give them the same room in a little different shape. See my reply to R. L. Taylor, elsewhere in this issue.—ED.]

IF HONEY is extracted from sealed combs, part starting with foundation and part with full-drawn combs that have never had brood in, which will be best? is a question in *American Bee Journal.* About a fourth of the repliers think the foundation will have the advantage, the others think there will be no difference. [I suspect that, if the truth were really known, there would be no noticeable difference. I doubt whether any connoisseur having two samples placed side by side could tell the difference.—ED.]

INSTRUCTIONS for treating swarming colony with clipped queen, p. 477, are all right; but as a precaution the novice should be told that he must see the queen, for in a good many cases the clipped queen doesn't get back in the hive after swarming. [That is true; and that is all the more reason why perforated zinc with ample passageways should be used in connection with clipping. R. L. Taylor uses the zinc, and at the same time clips the wings of his queens. I wonder if it is not to prevent the queen from getting lost.—ED.]

LIKE OTHER THINGS in bee-keeping, facing honey seems to be a matter of "locality." In St. Paul the commission men believe in facing. (See p. 469.) But in ten other cities, according to replies given in *American Bee Journal,* commission men set their faces against facing. [When I looked over the replies in the *A. B. J.* it seemed to me it was a little one-sided—that is, I did not notice any commission man who favored facing. Now, I wonder how many of the bee-keepers this year, if they get any honey, will take pains to put the combs in the shipping-cases at random.—ED.]

D. N. RITCHEY writes me he got 400 pounds of the most beautiful honey last year when his bees had nothing to work on but red clover. Any doubting Thomas at Medina can at any time see the long-tongued bees three miles west of Granville, Ohio. [Why, doctor, our bees work on red clover more or less every season. I will wager that Ritchey's bees have not any longer tongues than ours; or, to put the proposition another way, all Italians will work on red clover to quite a great extent. Are you really sure, doctor, that some Italians have longer tongues than others? Trot out your evidence.—ED.]

A FOOTNOTE, page 471, asks me to notice what Harry Howe says about metal spacers and the uncapping-knife. Yes, I notice. If I were a manufacturer I might insist all frames should be alike; but as it is, I don't care a blue bean whether my frames give trouble in uncapping or not so long as an uncapping-knife will never touch them. Now, honest, do you think I really should use a frame I don't like, just because of the danger that Harry Howe might not like it for uncapping? [Your question is a very hard one to answer. If I were in your position I should not know but that some time I might wish to run for extracted honey exclusively, or very largely, at least. Then how about those metal spacers on the uncapping-knife?—ED.]

HANDHOLES OR CLEATS—WHICH? is asked in *American Bee Journal.* Nearly all agree on handholes for shipping-cases. Most of them want handholes for supers. As to hives, 10 stand for handholes, 11 for cleats. This, in the face of the almost universal sending-out of handholes, is somewhat significant. G. M. Doolittle makes a point by saying, "The cleats save time in handling." Better give the option of cleats where purchasers are willing to pay for them. [Yes, our customers can have cleats any time in addition to the handholes if they will only ask for them, and will be willing to pay slight additional cost. But there has been no call for cleats on hives. Or do you mean to say that we should try to *create* a call for something that has real merit in the estimation of a few good bee-keepers like yourself?—ED.]

A VENTILATED COVER is cooler than dead air in summer, and dead air is warmer in winter. Why not have a hole in each end of cover to make the air live in summer, then cork up to make it dead in winter? [John B. Gough used to tell of a new kind of alarm-clock. When one wanted to get up all he had to do was to arise and pull a string, and the clock would ring a bell. I do not know, but it seems to me that, if a bee-keeper had to insert corks at a certain season of the year, and take them out again—well, he wouldn't do it, like the man who would lie abed and neglect to pull the string when he wanted to get up. But, seriously, there is something in your point that a dead-air space might be a compromise for both summer and winter, even if it were a little warmer than necessary in summer. This slight disadvantage might be more than made up by the extra protection in winter.—ED.]

A REMARK, p. 480, about getting tired of standing reminds me that there are three classes of bee-keepers—standers, kneelers, and sitters. You start out doing every thing standing or stooping. Then you sit or kneel a small part of the time when you have much to do. Sooner or later you settle down that, as a general rule, you want a regular seat to carry around. I commend to you a glass-box with a cloth strap for a handle. [I belong to all three classes. When I get tired of standing, I kneel. Then when it is convenient for me I sit down on the hive-cover or on an empty super. And speaking of an apiary seat, an empty dovetailed super is about as handy as any thing I know of. When laid on one side it gives one height; when stood on end it gives another; that is to say, it is an adjustable seat. They are always present in our yards, without going any great distance to get them. Come to think of it, this adjustable apiary-seat is something you suggested. Our Mr. Spafford is a sitter, and our Mr. Wardell is a stander.—Ed.]

H. H. McKinney did a good thing, Mr. Editor, when he called out that distinct statement, p. 477, as to your views on eight and ten frame hives. I arise to remark that I don't believe I could by any use of the English language more clearly express my own exact views on the subject. For comb honey I want 16 frames from spring to harvest; 8 frames when supers are given, then 16 frames when supers are taken off; for outdoors, two stories all the time except when sections are on, but only one story for hauling and cellar. But when bees have little attention, a twelve-frame hive is better than an eight-frame. [I suppose real good criticism is good for a fellow; but, alle samee, good substantial indorsement like the foregoing makes one feel very much better for the time being. I know that I have good backing on the same question in York State, in Michigan—all over the United States; or, perhaps, more correctly, I should say I am backing up the other fellows who for years have been working two-story or large colonies in single brood-nests. In France the Dadant system (large hives and large colonies) is used almost exclusively. The Frenchmen say that their large hives get for them more honey than the small ones.—Ed.]

"We should much prefer," says editor Hill, "to undertake finding the queen in a strong colony than in one less populous." Although I might not put it in just that way, I must say that some of the most exasperating cases I've ever met were where only a handful of bees were present, and it seemed I could count every one of them. It's a mystery to me where the queens hide in such cases. [Give me the less populous colony every time, for queen-hunting. I have known of instances where I wasted time in trying to find a queen in a nucleus, but they are rare; but I nearly always have to take quite a long hunt for her majesty in a populous colony. By the way, when brood-rearing has been going on at a good rate I can trace her up often by hunting for eggs. For instance, the first frame has sealed brood; the next one, unsealed larvæ; and the next one young larvæ; the next one, larvæ and eggs. Well, now, if the queen has not taken a hop, skip, and jump clear off to another part of the hive, I am quite sure to find her on the next frame. —Ed.]

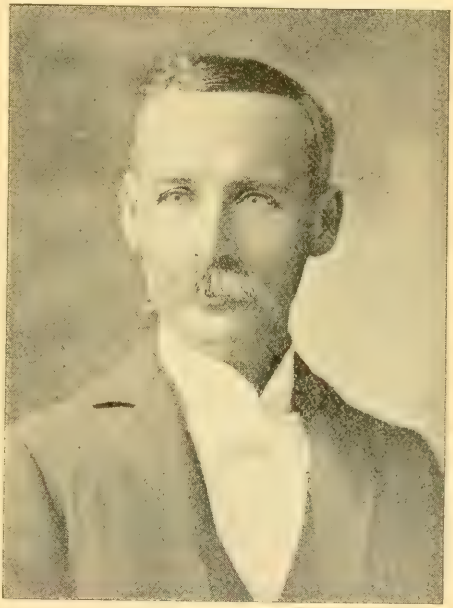
GENERAL CORRESPONDENCE

RAMBLE NO. 148.

The Ride to Calabasas; the Success of the Section-holder Super.

BY RAMBLER.

Mr. Brodbeck allows his bees to remain in the suburbs of the city until they get the full benefit of the fruit-bloom. This consists principally of apricot, peach, and orange. When the atmospheric conditions are just right the latter gives a large amount of nectar. The fruit source of honey is over in the latter part of April; the bees are then loaded on a wagon, and hauled to the location in the foot-hills.



G. W. BRODBECK.

A fine location has been secured thirty miles away, near the thriving town of Calabasas. Here there is a plentiful supply of sage, wild alfalfa, and buckwheat, in the hills, while the plains beyond bear many other honey-producing flowers. The photo shows not only a portion of the less rugged foot-hills, but also the valley beyond; and from an artistic point of view, as well as for sweetness, the location is unexcelled.

The apiary is neatly arranged upon terraces. The little honey-house is provided with a basement for storing the hundred and one appliances that are found in all well-regulated apiaries. During the active season the honey-tank is placed in the basement, and the extractor in the room above, and the work with the honey is all on the down grade until it is loaded into the wagons. This is a consideration that every bee keeper should have in mind when locating an apiary. It saves an immense amount of lifting and perspiring in this hot climate, and is conducive to a mild disposition and longer life.

At the time the accompanying photo was taken, 52 colonies had been taken from the terraces and loaded upon the wagon. This was also easy downhill work. The very efficient lieutenants who had charge of this work were Mr. Fassel, a young bee-keeper of Pasadena, and Mr. Feeree, of Los Angeles. That they are adepts at this work is proved by the fact that the entire hundred colonies were moved without the loss of a colony.

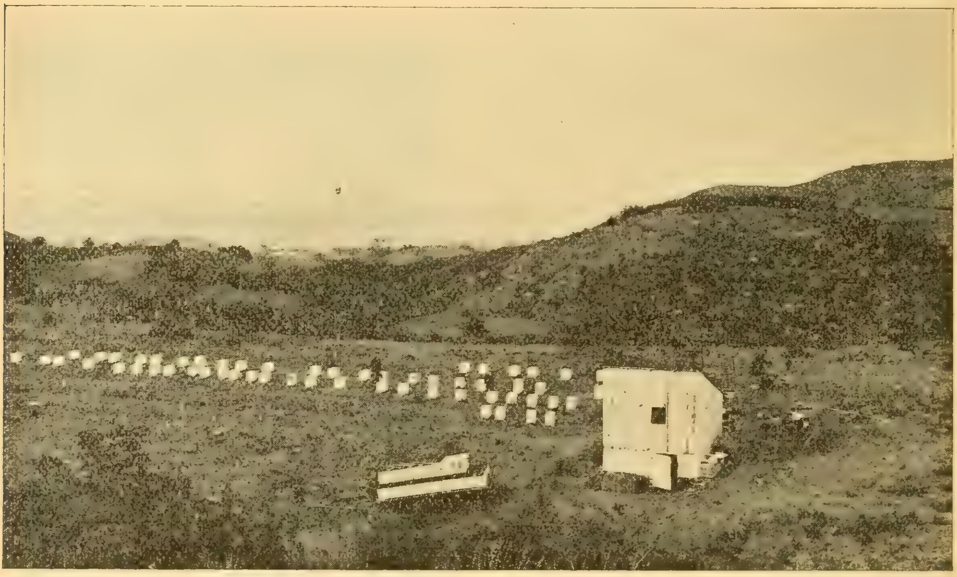
While moving, a shallow rim covered with wire cloth is nailed to the top of the hive, giving ample ventilation and clustering room for the bees. In the spring or autumn the bees can be moved without risk of loss in daytime; while if moved in the heated term, the only safe plan is to move in the night.

Mr. Brodbeck and Mr. Mendleson differ in their methods of migration. The former believes in making up a load for two horses, and allows them to trot over a good portion of the journey, making two trips for moving the hundred colonies. Mr. Mendleson believes that large loads and many teams is the proper way. In reasoning out the matter they are both right, for one prepares for moving 100 colonies, and the other for 1000. To show more plainly the different plans, I herewith illustrate.

The expense to Mr. Brodbeck for a grand outfit for moving his 100 colonies would be out of the question; but when he increases to 1000, which he proposes to do, I have no doubt he will adopt the Mendleson method.

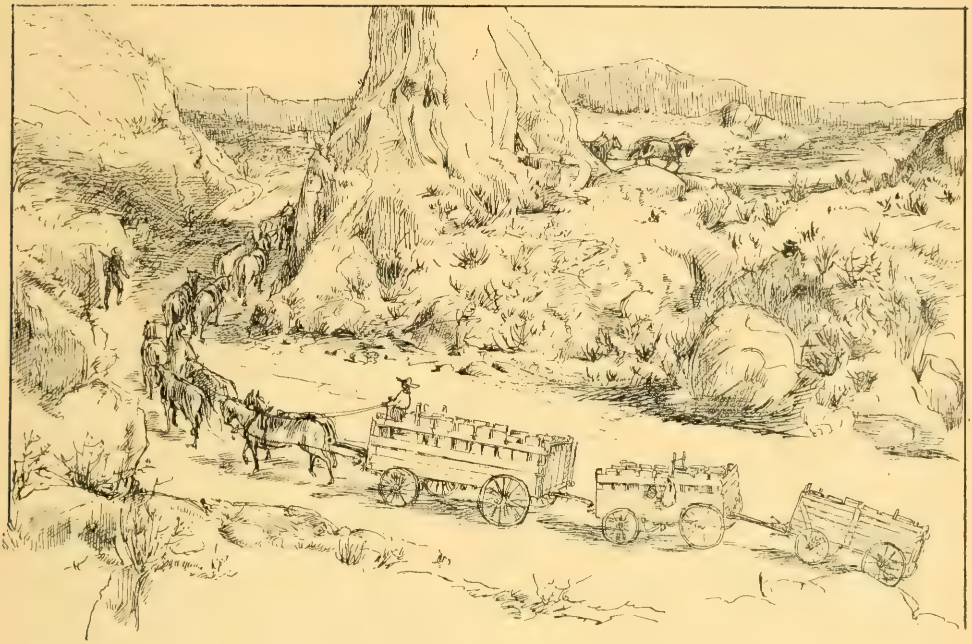
The apiary at Calabasas is usually worked for comb honey. As before stated, the hive is what may be considered a shallow one. Two brood-chambers are used, and the queen is given all inducements to fill them with brood. This is attended to in ample time to have a strong force of workers ready when the main flow of honey comes. The upper brood-chamber is taken off, and, the super of sections applied, the bees have to go into the sections at once. Expansion to any degree is attained by tiering up.

The most beautiful honey the eye ever dwelt upon is produced in this apiary, and it commands the highest prices in Los Angeles. The 4¼ x 4¼ section is strongly advocated, and Mr. B. very pertinently asks: "What if all our honey is produced and placed upon the market in the tall Danzy section, or in the fence section, what is there to warrant a better price than we are now getting in the section in common use?"

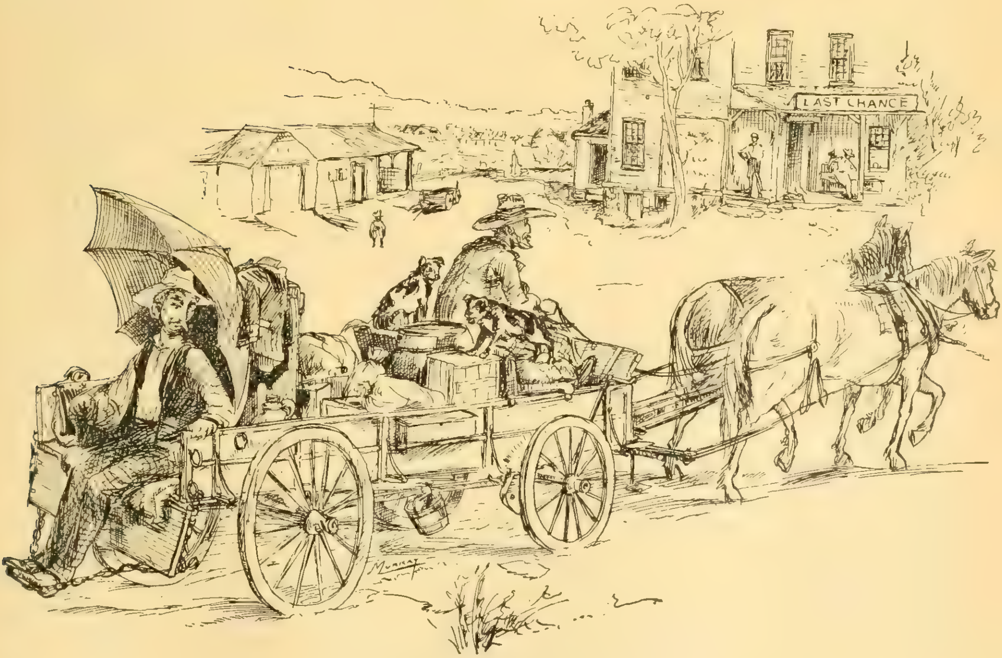


BRODBECK'S APIARY NEAR CALABASAS.

Mr. B. attributes much of his success in the production of a superior grade of honey to the use of the section-holder super and the use of narrow starters in the bottom of the section. This insures a better filling of the section. During the past year, owing to cool nights and a superabundance of fogs, and a few other unfavorable surroundings, the bees did not take well to the sections. If the comb-honey plan had been followed out, there would have been a light yield. Mr. B., seeing clearly this condition of things, changed a good portion of the colonies to the production of extracted honey. Having plenty of surplus



"THE WAY MENDLESON MOVES BEES."


LAST CHANCE
MURRAY

THE WAY WE WENT TO CALABASAS.

combs the change was attended with success, and a yield of about twelve tons of honey was the result.

Another bee-keeper in the same field, with double the number of colonies, secured but little more than the above, which clearly shows that the bee-keeper is the main factor in the production of a large honey-yield. The bees will store honey under very unfavorable cirsumstances if the management is adapted to the conditions of climate, nectar secretion, and strength of colony; and the best results are obtained only through the exercise of prescience; and I believe that quite a number of our most successful bee-keepers, those who have followed the business for years, gradually attain this faculty.

When the season's work is all done in the foot-hills, and after the fruit is all gathered and dried in the city, the bees are then brought in during the cool autumn days. They have been culling flowers that are scant of honey for many weeks in a dry pasturage, and it is with a more joyous hum they go forth near the city where the eucalyptus and alfalfa are in bloom. It is a hard jaunt, however, to move bees, and even Mr. B. longs for a place where bees can be managed without the necessity of the moving process.

Mr. Brodbeck, wishing to initiate me into the management of an apiary thirty miles away, kindly invited me to take the journey to Calabasas with him. I accepted the invitation. Mr. B.'s pet horse, Prince, and Mr. Feeree's horse, drew our vehicle. It was loaded with various bee-fixings and a large box of provisions.

"Why, Mr. B.," said I, "you don't expect us to use all those provisions in three days' time, do you?"

"It is well enough to take along a good supply," said he; "then I had to put in a few scraps for Juno and Fido."

"Oh! I see," said I, "the terr — the dogs are going along too, are they?"

"Yes," said Mr. B. "They are so sad and lonesome when I leave them at home. They enjoy a ride just as much as a person. I do like to see them enjoy themselves."

Well, we started; and I must say the terrors did enjoy the ride. The artist can shown in a manner plainer than words how we four enjoyed the scenery on the way to Calabasas.

My previous experiences with Prince led me to believe him to be a slow quadruped, and I suggested as much to Mr. Brodbeck. He acknowledged that he might be slow sometimes when driven alone, but with another horse his ambition was to keep ahead. Mr. Feeree's horse had the same trait, and between the two we should fly like a leaf before the wind.

When we started out in the morning, and the horses were feeling fresh, they did very well for a few miles. Mr. B. shouted back to me several times, "See how we fly! I told you so!"

Just beyond the city limits we cross a little range of hills through the Cahuenga Pass. At the very entrance of it, and at the foot of the grade, we encounter a dwelling whereon is a sign bearing the following words: "THE LAST CHANCE;" and the horses, acting as though they had finished their journey, turned right up to the front door.

"Hello, B.," said I, "is this Calabasas?"

But brother B. was striving with the whip, and, after a while, made out to get up a locomotion of the horses again, making a few remarks about that Feeree horse.

"That's right," said I, "lay it all to Fer—" But I said no more. Those terrors had such a baleful look at me that I hauled my umbrella over my head and kept quiet; but those horses, so greatly were they disappointed over the non-halt at the Last Chance, they now tried to see which could walk the slower. Ah me! that was a long road up the west side of the San Fernando Valley. I had ample time to view the landscape. Every few minutes I wanted to shout, "I told you so!" but those terrors were on the alert to resent any intrusion on their master's dignity, and again I kept quiet.

Toward evening we drew up to the little cabin. The dogs were, fed and put to bed early; and, finding such a relief, I forgot the trying episodes of the day; and during the rest of the stay I had a very enjoyable time. I had no further tribulation while at the apiary, for, keeping near bees, there were no canines to bother; in fact, I had the upper hand of the dogs there, and that was an immense compensation for the previous inconvenience they had caused. For many days I will remember my visit to Calabasas.

SELLING COMB HONEY TO GROCERS.

Be Your Own Drummer; Work for and Expect Large Sales; Be Businesslike, and Answer Objections; Labels and Second-class Sections.

BY G. K. HUBBARD.

Editor Gleanings: — Although you have published a number of articles on the subject of selling honey, I thought it possible that I could contribute something on this that would be helpful, and that might encourage some one to make an effort in this line who has dreaded to undertake it. The object of this article is to encourage those who have a crop of honey to dispose of to sell it at the groceries in neighboring towns, thus accomplishing the desired result of getting better prices and keeping the small shipments from going to the city commission men.

We Californians are doubly interested in keeping honey from going into the city markets, for the reason that we are compelled to sell our product there. There is no escape from it except for those who have small amounts to sell. Our honey must of necessity go to market in carload lots of 1000 or more cases, and it is only the large cities that can handle it in such quantities. The smaller cities and flourishing towns offer a splendid market at fair prices, and ought, in nearly every case, to be supplied without the grocers having it shipped in from the wholesale cities. The cost of getting a pound of comb honey to the eastern market, counting the loss from having to pay the freight on the cases, is about 2½ cents for freight, if shipped in car lots. Less carload, if we care to take the risk of breakage, the cost per pound, with the extra crating necessary, is 4½ cents. This extra 2 cents, with the accompanying risk, shuts us out of any markets except those that can handle honey in car lots, and this leads me to emphasize the point that the smaller cities should be supplied from the surrounding territory, and the city markets largely left to those who are of necessity compelled to use them.

Now, my reader, if you have a crop of comb honey of from 20 cases anywhere up to 200 or so, I suggest that you sell it to the grocers in your surrounding territory. You may answer that you are not a salesman; that it takes time and ability to push off your crop a few cases at a time; that you would prefer to take less for it and see it all go at once than to get more in smaller sales. Of course, you would if the difference were not too great; but the difference is too great for you to afford if you wish to make the best success from your pursuit. Suppose it does take time to sell a crop; if it pays you well for your time, can you not afford to take it? I wish to urge you strenuously to make a brave trial and see if you do not get along better than you expected.

I am going to give some experiences and suggestions, and will say at first that you might make a score of calls and not use many of the ideas; but if I give you the idea of how it can be done, your tact and good sense will suit your talk to the right person. I can not map out a minute program for you, but I can give you some insight of a plan that has proved very profitable to me, and incidentally you will learn something about my ideas of having a crop in such readiness for market that it will command the highest price the grade will bring.

You probably know all that is to be known about your own home market. You often go to town to do your trading, and know as well as any man in the community about how much honey your grocers have on hand, and what the possibilities are for business. As an almost invariable rule you will never make a large sale in the town where you are best acquainted. Your merchant will say, "I might take one case of you. You are in town often, and I can get more of you almost any time." Therefore I urge you to make a longer drive, get out of your own immediate community, where you will have a fighting chance of selling several cases to one customer.

Start with a load of 10 to 20 cases, according to the size of the place you are going to visit. Put on the best suit you have; collar and necktie; if you ever wear cuffs, do not leave them off this time; give your shoes an extra good shine, and look just as neat as possible. You are not a farmer or bee-keeper now; you are a business man, and are going out to do business in a businesslike way. Take along your horse-feed if you wish; but go to a modest hotel where you can get a meal for 25 cents, and have the almost as desirable point of being able to wash, and to brush the dust thoroughly from you, from hat to shoe-sole. I do not think I overestimate the value of your personal appearance. While clothes do not make the man, they do, very largely, make the estimate that people place upon you, especially among strangers. You will walk with a firmer tread, and feel more like business, if your appearance is not being criticised, but, instead, is helping you to appear as though you meant business. I trust my reader's good sense to understand me aright, and not think I advocate unreasonable extremes.

You know what your honey is worth, and the price you ought to get, which should be enough above the price at which you hold the entire crop to pay for the time you put in distributing it. Adopt your prices for your different grades, and stick to them, treating all alike. It is all right to miss a sale occasionally on this account, as it will save you so much time, and be such a help in making sales to these parties in the future.

Being all in readiness to be your own "drummer," go to the leading grocer, and be as pleasant and polite as possible. Make your business known at once, for busy men do not care to talk much with strangers about the weather, crops, condition of roads, etc.

"I have driven over from Blankville with comb honey, and this case is a fair sample of my best grade. I take a great deal of care in producing a good article, and casing it up fair, and I think, if I could sell my load to you, you would find it to give good satisfaction to yourself and to your customers."

Of course, he will look at the honey, and likely pass his opinion upon it, comparing it with the honey he has handled. You will soon know whether he is at all interested or not, whether he is well stocked, whether or not he is supplied regularly, as his trade demands, by some home bee-keeper who is his regular customer, and who may put an article on the market that compares favorably with yours. If there is no chance at all for a sale, bid him a pleasant good-day and tell him you will probably see him again some time when he is nearer ready to buy. Then if he wants to visit a little with you, and start an acquaintance, meet him half way, letting him make the advances; but make it short, and leave him with the impression that you are out for business, and that your business is just as important to you as any other man's business can possibly be to him.

The next grocery you call at, the man you take to be the proprietor is busy. After waiting a little, and you see he is not apt to be through with his customer very soon, you start out. Likely he or one of the clerks will inquire if you wish to get any thing; but you reply that you have a little business with the proprietor, and that you will call again in a little while. Thus you save your own time, and impress the grocer that you are a man of business, and too much of a hustler to waste your time waiting for some independent chap to give you a little of the time he wants you to think is so extremely precious.

At another grocery you see at once that the proprietor is interested in what you have. He has but little honey, or none at all; and when you see there is probably a chance to sell him some you say, "I have just come to town, and have talked to but one man. I am very sure you could do well with the honey I have if I could sell it to you. I have only 15 cases with me—7 of the fancy grade and 8 of the dark; and if I could sell you my load, I am confident you would realize well on the purchase."

He looks at you with eyes wide open; he thinks to himself, "Fifteen cases of honey at one purchase? Gracious! wonder if he thinks I sell all the groceries used in this county." But all the same you have made a favorable impression. You have flattered him by assuming that he is one great big merchant, and you have impressed him with the idea that you are out to do business on a big scale.

"Fifteen cases? oh! I couldn't use that much. You see, the grocery business is terribly cut up here. There are many stores, and of course every man has his friends. We never buy very heavily. We keep pretty close to shore, as the saying is; but then I don't mind buying a few cases of you if I can get it right."

If you had taken in a case and asked him to buy it he would hardly have thought of asking for more; but now that you put the idea into his head of buying the load he feels safe in risking a few cases. Likely you sell him three of each grade. You set the cases in a conspicuous place and he remarks that it looks like enough to run his trade for three months; but you thank him for the money, and wish him better luck in moving it than he imagines. You certainly would not have sold him six cases if you had tried to sell him one, and it is almost as certain you would not have sold him six if you had not first talked up the sale of your load.

Now you go back to the man who was too busy at your first call. You tell him your business, and where you are from, and that, as he will be soon out of honey, he is interested in what you have to say; but he is one of those men who always want to cut and slash prices; and to do this he begins to talk hard times and low prices.

"I have only nine cases of this left, and I should like to sell you the lot."

"But your price is too high."

"I do not think so, considering the quality I furnish."

"But I can get it shipped in from the wholesale houses and commission men in Blank City for at least a cent, and likely a cent and a half, less than your prices, and get my business discounts besides."

"It is barely possible that you can do as well; but I very much doubt about your getting as good value for the money as I offer you. There is the risk of your not getting as good an article as you expect when you place an order, and also risk of breakage in transit. I am right here with the honey; every section of it is in first-class condition; you can see exactly what you are buying—no freight, drayage, or breakage; and if any case I sell you is not as represented I will take it off your hands next time I come over, without any hard feelings on the part of any one, or a lot of unpleasant correspondence over such a matter. I sell to every one alike; and while it is natural for every buyer to want to do a little better, and have a small advantage over his competitor (and I do not blame you for it), at the same time I know by experience that it is more satisfactory all around to treat all alike. You can make 25 per cent easily enough on my honey at the prices I offer; and the rebate on the cases when empty, if you will let me have them back in good condition, will more than equal the business discount you mention. If you had these nine cases standing up front here I do not doubt it would attract as much attention, and make as fine a show, as any lot of honey you ever handled."

He tries to beat you down on the price; but you are firm, though very gentlemanly, and, as a result, he concludes to take two cases of fancy and two of dark, after you have reassured him that you will be over again in 60 days or so, and will pay him 10 cents each for the empty cases if he keeps them in good condition.

Riverside, Cal., June 8.

To be continued.

BEE-KEEPING IN "MERRIE ENGLAND."

J. H. Howard, Holme, Peterboro, England, and his Apiary; the Weed-foundation Man of England.

Just 14 years ago the site of the apiary pictured in the illustration was an uncared-for and waste corner of land in Holme, near Peterborough, Mr. Howard at that time leaving his native town of Huntingdon, and taking up his residence there, to serve as builder, etc., to the late W. Wells, Esq., then owner of the extensive Holme Wood estate. We understand the "squire" gave much encouragement to Mr. Howard, and when the latter had fully equipped his apiary with hive, bees, and manipulating-house, besides planting the spare ground with fruit-trees and flowers, frequent visits were paid to the apiary by Mr. and Lady Louisa Wells, and their numerous visitors and friends. The late William Raitt, after visiting most of the more important British apiaries, on seeing Mr. Howard's place at once named it "The Model Apiary"—a designation its owner is justly proud of, as coming from the well-known Scotch beemaster. The rather exceptional nature of Mr. Howard's surroundings has placed him in touch, as it were, with some of the best families in the country, an advantage he has put to good use in forwarding the general interests of the craft. In order to thus secure the patronage of influential people — whose position in country districts enables them to render so much help — modern bee-keeping has at all times been demonstrated with live bees, and their work at the "model" apiary, and impromptu lectures, given on many occasions by Mr. Howard to select companies of ladies and gentlemen interested in the subject. In fact, the manipulating-house was designed and built by Mr. Howard, with a front of glass, so that a good-sized and safe auditory within could witness the opening of a modern frame-hive, and see the bees and their work, as shown and explained by him from the outside.

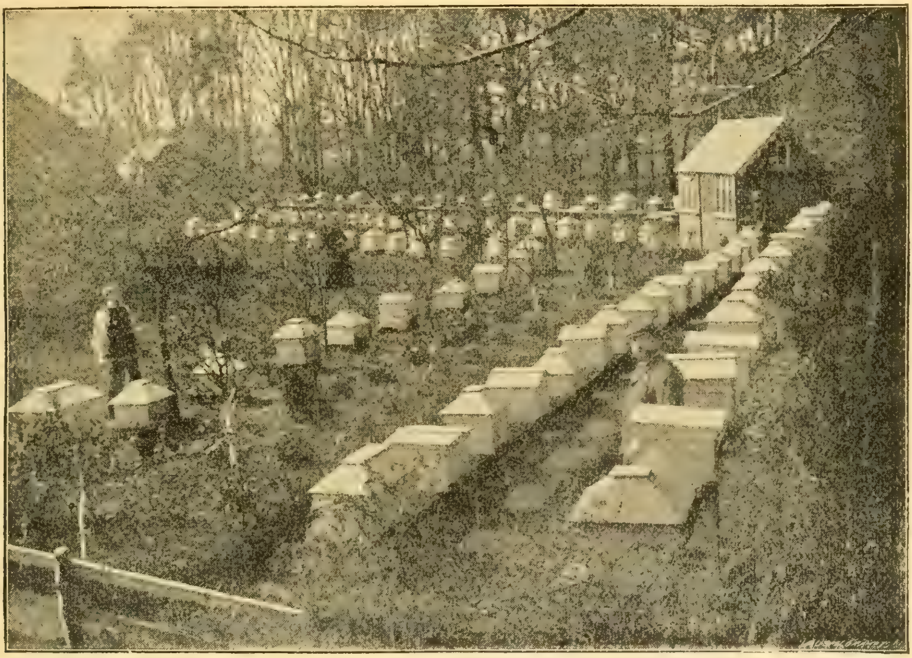
In giving us some detailed particulars regarding his apiary, Mr. Howard writes: "The manipulating-house faces due south, doors being so arranged that I can enter direct from any path in the apiary. All windows swing on their center, so that bees finding their way into the house may be turned outside at once. The hive fronts face southeast and southwest. The view looks from east to west.

"In 1897 I secured 160 one-pound sections from the single hive seen third from the end of the center row, immediately in front of where I stand in the photo."

Among particulars as to his past and present bee-work Mr. Howard says: "Before the manufacturing business pressed heavily on me, as it now does, I went about a good deal showing products from my apiary, which have won me not a few medals and prizes. Here also I have gained and am still gaining that practical experience which is so necessary to guide the teacher and the taught aright in giving advice asked for by my many correspondents."

Mr. Howard then characteristically adds: "So far as the picture of my bee-garden, I may say that in the view, and opposite to 'Churchwarden' Howard, stands the 'Parish Clerk,' fork in hand. This is the 'official' who, directed by his superior officer, attends to the apiary garden and the other garden adjoining my house. For at 'Holme' not only bees, but flowers, fruits, and vegetables get attention."

"In the center of the Model apiary," our friend continues, "you will note Mrs. Howard has ventured—note also how carefully she has marked out her line of retreat! for somehow bees always leave such 'well-marked' evidence of any close attention they may pay her that this bee-master's 'model' wife prefers confining her bee-work to apiary products and putting them up for show and market, rather than coming in close 'touch' with the bees. Still, my better half is now more in sympathy with bee-life than when she first became Mrs. H., and thought that 'bees had no mission but to sting!' My foreman, standing after a manipulation hard by the manipulating-house, completes the figures in the picture."



APIARY OF J. H. HOWARD, HOLME, PETERBORO', ENGLAND.

With the multitude of things to be seen to daily, and the many public offices he fills, Mr. H. is a less frequent operator in the apiary now than formerly, especially during the past season of 1897. For, having purchased and imported special machinery, he has had personally to see to the work of turning some tons of beeswax into comb foundation by the "Weed" process, for which he is sole patentee and manufacturer in Great Britain.

[This is the second of a series of illustrated articles, the plates for which, as well as the material for the wr.te-up, were obtained from the *British Bee Journal*.

We have had quite an extensive business deal with Mr. Howard, and it gives me pleasure to say that those dealings have been of the most satisfactory kind. When we were drawing up contracts, Mr. Howard, so far from insisting on certain features that would be to his advantage, actually went so far as to suggest certain clauses that would be to our advantage and a possible disadvantage to him. Yes, he is the soul of honor, and a man whom it is a pleasure to know, in more ways than one.

He is the sole manufacturer of the Weed foundation in England, and having all the latest machinery, he is capable of turning out a product that will equal that turned out at Medina under the direct supervision of Mr. Weed himself.

If there were more men in the world like Mr. Howard, there would be less strife and more brotherly love; therefore it gives me peculiar pleasure to introduce our *brother* from "Merrie England."—Ed.]

TOO MUCH HONEY IN THE HIVE.

BY HARRY LATHROP.

As a rule, bee-keepers are not troubled with too much honey; but there are times when the brood-chamber may have too much for the best interests of the colony. In the earlier days of the extractor some writer advised to "keep the extractor going," and added that it would even pay to extract from the brood-chamber, and throw the honey away in order to give the queen room. If bees are properly handled there will be very little extracting from the brood-chamber. The ideal condition for colonies in the spring in this climate is to have them as my Browntown yard was this year; that is, come out of winter quarters quite heavy in stores, breed up rapidly, consume the honey in the combs and replace it with brood, all stores to be consumed, and hive completely full of brood at the time honey begins to yield in excess of the daily consumption, at which time supers are added.

There is another condition I do not like, but one which I find in my Monroe apiary—a condition in which the colonies come out heavy with honey but rather weak in bees. Colonies build up slowly, and, instead of reducing the amount of honey in the combs, add to it from early sources. In such cases this honey must be promptly removed or the colony will not amount to much.

My plan is to remove full combs and insert sheets of foundation in the center of the brood-chamber. The full combs removed, I sometimes use, to contract, brood-chambers in which I hive colonies to be run for comb honey. A full comb of honey is as good as a dummy for that purpose.

I was quite interested a few years ago in Mr. Boardman's plan of feeding up in the spring, and two years ago last winter I spent a very pleasant day visiting at his home, and conferring with him in regard to it. I expected to try his method, and got a lot of feeders ready, but I have to confess that at this time I have had no chance to do any spring feeding since then, for the reason that I got all the honey I wanted, and sometimes a little more than necessary, from the fields. For my part I am glad of a condition which enables me to dispense with *all* feeding.

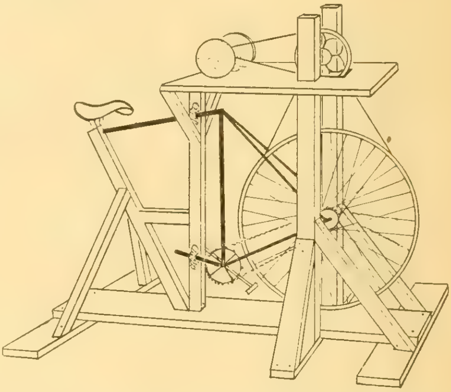
Browntown, Wis., June 1.

THE BICYCLE SECTION-CLEANER.

How to Make One.

BY ARTHUR HOWE.

Mr. Root:—Inclosed you will find a drawing of the section cleaner and polisher I use, which is, I think, far superior to the Aspinwall or Golden. It has two wheels, as you can see. One is covered with No. 1½ sandpaper, for cleaning the rougher propolis from the section. The other is covered with emery cloth to finish with, if one wishes to polish the sections as nice as when they came from the factory.



This cleaner, as you will see, is made by using an old bicycle for the power, which is geared so that one pedal revolution equals a wheel 66 inches in diameter. The wheel above is an old sewing-machine master-wheel, set in ball-bearings, to which is bolted a 4½-inch pulley. The belt from the bicycle-wheel is crossed and passed over this pulley, which gives it, with the sewing-machine wheel, 14⅔ revolutions for each pedal revolution of the bicycle. The sewing-machine wheel is 12 inches in diameter, and is connected by belt to a 2½-inch pulley on the polishing-lathe, which gears the lathe to 70⅖ revolutions for each pedal revolution. Multiply this 70⅖ by the number of times one can pedal a bicycle per minute, and you will have some idea of the speed of this polishing-wheel. I have tested it with a speed-indicator, and got 7000 revolutions per minute.

When polishing sections I run it at from 1200 to 1800 revolutions per minute, which is a very easy gait. The cleaning-wheel one can make as large in diameter as he wishes or has sandpaper to cover. I make this wheel two inches face; first cover the face of this wheel with two or three thicknesses of felt, then cover with sandpaper. The felt serves as a cushion under the sandpaper, making it wear longer and do better work. By pressing on the edges of the sandpaper you will find that it gives enough so that, with very little practice, one can clean the "scallops" as easily as any other part of the section. It will cut it out as nicely as can be, and do it quickly too.

If you have any misgivings as to the rapidity and quality of work this cleaner will do, have Mr. A. I. Root take his next bicycling-tour on a wheel of this kind, polishing sections. A stormy day will do as well as any. Then if he does not admit its value, and give it great praise, I'll know it will be because he is kept too busy blowing sawdust from his head, for I find one needs a protecter over the nose.

You can put your sandpaper on the diameter face of this cleaner if you like. I once thought it would be best, but have changed my mind.

The bicycle used in making this machine was an old cast-off one, and cost me nothing. The labor I performed myself. It was also cast-off labor, so I paid nothing for it. The polishing lathe-head, belts, ball bearings, and other material used, cost me $3.50. Any one who can pick up an old bicycle, and is handy with tools, can make a cheap section-cleaner, and have a good tool for other kinds of work requiring speed rather than great power, such as an emery wheel, small grindstone, drill, lathe, or a small saw. One sheet of sandpaper will clean a case of 24 sections.

Colfax, Wash., Feb. 13.

[Your scheme of using a part of an old bicycle to secure speed is very ingenious. There are hundreds of old "bikes" out of date and out of order that are unfit for road service, and yet would do nicely as a part of a section-cleaning machine. Even if the tires are worn out and won't hold air, it makes no difference. They are to be yanked off, and the hollow rim that held the tire will be just right to hold a belt.

Twenty years ago I used to operate a bicycle scroll-saw made by W. F. & John Barnes, and still put out by the same firm, I believe. It was the most practical man-power machine of any thing I ever tried. Indeed, I rather enjoyed kicking the pedals, for it was easier to keep my legs going on this light-power machine than it was to keep them still.

For a home-made affair I am not sure but this section-cleaner beats any thing heretofore put on the market.—ED.]

SECTION-CLEANERS—A SUGGESTED IMPROVEMENT.

Fences; Sections 9 and 8 to the Inch; Reasons why the Latter should be Used.

BY FR. GREINER.

Friend Ernest:—A few days ago I had a very pleasant call from friend Harvy Perry, of Bristol. Mr. Perry is one of our most successful comb-honey producers. I am not sure that you met him when you visited this section last fall. He has not been in the business as long as many of us, but he has mastered his trade. He does not fall in love with every new fad at first sight, but experiments on a small scale till he finds out by actual test what a thing is worth. I am always glad to meet Mr. Perry, and never fail to learn of him something of value. He has an eye for business; and if by any new method he can increase his honey crop, produce a better article, or lessen the amount of labor, he is not slow to adopt such. We had a genuine bee-talk together; and as some of the things might interest you, I will write them down.

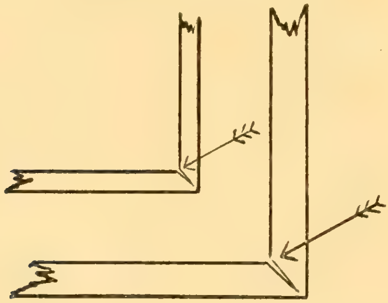
Our conversation naturally drifted toward the section-cleaning machine. Friend Perry has studied out one on the disk principle, which he is sure will work well; but, not being situated so he can build one himself, he said to me, "Tell Mr. Root about it when you write him again," and so I will.

Well, his idea is to have a disk fitted out with *rasps* next to the periphery, and with sandpaper in the center. The rasps are to take off the bulk of the propolis; then by sliding the section to the center of the disk the sandpaper is to finish the job. As the rasps would in all probability gum up in time, he proposes a wire brush on a revolving cylinder, to be brought to bear against the rasps by means of a lever at the will of the operator, and thus do the work of cleaning from time to time as it may seem necessary.

I should not wonder if a machine constructed on this plan would work nicely. Simply by means of a jack-knife I am able to clean from 400 to 500 sections per day (depending somewhat on the amount of propolis on the sections), take them out of my wide-frame supers, grade, and crate in the bargain. I don't understand in what condition neighbor Roat's honey must be (see GLEANINGS, Apr. 15, page 298), if he can not clean more than 100 sections per day. I have raised comb honey near his locality, and did not find any more trouble than I do in my own. A section-cleaner may not hasten the work very materially, but will, of course, do the work so much better that we shall all be anxious to use it, so we are awaiting the development with anxiety, and hope a perfect-working machine will be out by the time we need it.

Now, what about *fences?* Well, let us go slow. That is Perry. I myself had intended to fit up 100 supers with fences; but after talking the matter over at our convention last winter and since, I have concluded that 25 supers will be enough for a trial. If you establish that new department, "The Asylum," Mr. Editor, I am afraid a good many of us "will be there." The older bee-keepers, who commenced with the swinging frame and the wide-frame supers, can not well follow all those radical changes of late except by way of experiment. I know quite a number of extensive bee-keepers who still cling to the above-named things — even a cleat on the supers and hives. With many of us it was a sort of "happenstance" our starting in with this or that kind of hive, frame, or super; and now, after being well equipped, we do not feel as though we could afford to change to other styles, although we may deem it desirable. If I could sell out, I might adopt the newer styles of hives and supers. Friend Perry is an advocate of the loose swinging frame, but favors the half-story brood-chamber. He wants his frames a full inch wide all around—tops, sides, and bottoms. I have fitted up 50 half-story brood-chambers with spaced frames, using blind-staples for spacers between frames and on the ends. I have used some fifty or sixty T supers and 125 of Root's combined honey and shipping case of twelve years ago, but at present I use nothing but wide-frame supers, which I may in time fit out with fences, depending on the success we have with them.

In regard to the sections of the present day, we decided that some manufacturers get them out *too thin*. They should be ⅛ inch thick ; that is the least. When thinner the honey is more apt to be injured in handling — quite an object now, as we are about to use the section-cleaner. The thin section, on account of less shoulder, is not as firm of itself (as shown in Fig. 1). Secondly, when a thinner section is used in connection with the slotted separator, the danger of the honey being bulged out is increased, as the space (as indicated by the arrow in Fig. 2) is slightly enlarged.



The third reason why we want a section not less than ⅛ inch thick is this : Our sections cost us now $2.50 per thousand. They weigh about 60 lbs. We sell them as honey at ten cents, which gives us a gain of $3.50 over the cost. When sections are dressed so thin that the weight is but 50 lbs., as now, then we actually lose $1.00 on every 1000 sections.

The Cowan honey-extractor I received from you is a very fine piece of furniture for a honey-house, and no mistake. However, it did seem to us that some space is wasted at the top of the can, that would be of great value at the bottom, for storing.

Naples, N. Y.

[The idea of having a disk fitted out with a metal rasp surface next to the periphery, and sandpaper in the center, appears to me to be very feasible. If it should get filled up with propolis—that is, the metallic grating surface —it could be cleaned with a little gasoline, and by that time the sandpaper would probably need changing. I hope all our friends of a mechanical turn of mind will give section-cleaners a trial. Then do not forget to tell the bee-keeping world about them.

Yes, it is quite true that the style of frame or hive used by many bee-keepers has been regulated by "happenstance" rather than by preference. Dr. Miller, for instance, bought out an old apiary years ago, the frames of which were almost Langstroth in dimensions, and yet not quite. We do not and never have advised bee-keepers to throw aside old implements, but, for instance, in the case of a beginner or where one is starting an out-yard, and has to buy new goods, then we advise buying the latest

With regard to sections 8 and 9 to the inch, the relative difference in size is not nearly so great as that shown in the drawings herewith. If both were drawn to a scale it would be very difficult to tell which one was which ; and the relative difference in strength is, I think, so small as to be inappreciable. But there is a difference of a dollar a thousand, no doubt, in your locality, in favor of the pocketbook of the bee-keeper *after* the sections have been placed on the market, filled with honey. We are willing to make whatever the trade calls for. But many Western bee-keepers favor 9 to the inch because, in car lots, they have less freight to pay, and, consequently, the sections cost less.

We are glad to have all these points discussed, even if they do make our goods appear at a disadvantage in comparison with those turned out by some good competitor. Let the truth come out, hit where it may.—Ed.]

HOW QUEENS PIPE.

BY H. LINDSAY MILLER.

In the last few numbers of Gleanings for 1897 there are several notices, letters, and "Straws" about queens piping ; and friend Arwine, on page 846, talks about "notes of defiance" and "wails of agony." No doubt he is an expert at the language.

I am afraid that bee-keepers have often anticipated the queens, and made them say what they (the bee-keepers) thought was appropriate under the circumstances. I have often heard a young queen pipe just after she had left the cell ; but I have never been able to make out that she was "spoiling for a fight." Again, I have frequently seen bees ball their queen, though I don't remember having heard the queen make a remark during the operation. But if a queen did give expression to her thoughts at such a juncture, I don't think that even friend Arwine could expect her to say, "Well, I *am* having a good time."

What I want to say is that, in dealing with this matter, or any other matter connected with bees, what we have to do is to give up speculating and theorizing, and come down to facts. Let bee-keepers observe what happens, and make a note of it. Don't expect to find it out all at once. The facts you record may be of no use to you at the time, but they may be of immense use to some one who is working at the same matter, or who will be working at it in time to come.

Some years ago I was rearing a lot of queens, and making nuclei for them, and it nearly always happened that, when I was doing any thing with the nuclei, the young queens would pipe This would frequently happen while I had the frame with the queen on in my hand, and time after time I have watched the queen during the process. The queen was generally moving quickly about, as young queens are apt to do when disturbed; but when about to pipe she would always stop, press her thorax and abdomen against the comb, and bend her head back till the part which usually faces directly forward was looking directly upward. This bending-back of the head was the most decided movement made. It would occur as the sound was emitted, and between the notes the head would return to its normal position. The wings gave slight tremors, but not sufficient to account in any way for the sound. I never saw a queen "running about and piping." They always stopped still during the process.

It seemed to me it was not a very easy matter for the queen, and always seemed to call forth a good deal of effort on her part. I think it may be considered settled that the wings have nothing to do with piping. The facts noticed by Frank Cheshire and others, of queens piping when the wings were absent, should set this point at rest.

Warrnambool, Vic., Aus., Feb. 4.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

SUCCESSFUL BEE-KEEPING.

Question.—I am a beginner in bee-keeping, having just purchased two colonies, and subscribed for GLEANINGS. Will you please tell me through your department in that paper, in brief, how I may become a successful bee-keeper?

Answer.—This is giving me quite a task, and one upon which might be written enough to fill many numbers of GLEANINGS, and even then "the half never be told." In fact, all of the thousands and millions of words which have ever been written on the subject of bees have had "successful bee-keeping" as their object. Yet, out of the thousands who have read the words written on this subject, how many have become successful bee-keepers? I venture the assertion of not more than one in ten. And before I pass on to the "brief" of the matter, allow me to say that the *success* in bee-keeping, as well as in any other pursuit in life, comes through the *man*. If you are willing to put your whole life and being into apiculture, there is little doubt that success will crown your efforts; but if you go at it in a sort of listless, go-as-you-please spirit, you will stand the same chance others have stood, of recording "failure" on your banner.

Now, in brief, to be successful the apiarist must have a simple movable-frame hive of some kind; and the main work up to the general honey-harvest, the time of which should be familiar to the apiarist, should be to secure as many bees as possible on the stage of action at just the time that *harvest arrives.* All know that bees gather honey or nectar, instead of producing or making it, and that the eggs laid by the queen produce bees; consequently the more eggs the queen lays, the more bees we get; and the more bees we have at the right time, the more honey they gather. In fact, one way of looking at it is, the queen is the producer of the honey. Therefore if we wish good returns from our bees we must see to it that we have good prolific queens, and that they fill the combs with brood before the honey season commences, so that, when the honey harvest comes, the bees will be obliged to place the honey in the sections, or surplus-apartment, as there will be nowhere else for them to store it.

But how shall we secure combs full of brood and plenty of bees to carry on the labors of the hive by the time our honey harvest begins? As soon as spring opens, our bees should be examined by lifting the frames of each hive; and if the colonies are weak the bees are shut to one side of the hives by means of a division-board, so as to keep up the necessary heat for brood-rearing, on as many combs as they can cover. As soon as the queen has filled these combs with eggs I part them in the middle, inserting a comb of honey which has had the sealing to the cells broken by passing a knife flatwise over them, between those occupied with brood, and in a few days the queen will fill this also, and so we keep on until every available cell is occupied with brood. If the bees can not use up all the honey given at each insertion, give an empty comb occasionally, and do not put in either till those combs they already have are fully occupied with brood; for if you do a loss rather than a gain will be made.

Thus it will be seen that, instead of the queen laying her eggs on the outside of the cluster, she lays them in the center of the brood-nest, where they should be. After the hive is full of brood and bees it does not make so much difference, as the weather is warm and bees are plentiful, so that the queen can deposit her eggs anywhere in the hive.

As soon as the strongest colonies have their hive full, take a frame of brood just gnawing out and place it in the weaker ones, giving the strong one an empty comb for the queen to fill again, and so keep on until every hive in the apiary is full of bees and brood. When this is accomplished put on the sections, and, as was said at the commencement, if any honey is gathered it must be put in these sections. Each section should have a small piece of white comb or a strip of comb foundation attached to the top as a "starter," and to cause the bees to work more readily in them. The center tier of sections, if possible, should be full of comb left over from the previous year. As soon as one-fourth of the sections are filled they should be taken off before being colored by the bees passing over them too long, and empty ones put in their places, thereby causing the bees to work with renewed vigor to fill up the vacant space left where the full ones were taken out. Thus keep taking out full ones and putting empty ones in their places as long as the honey season lasts.

This, in short, is the way I work my bees; and until I entered the queen-rearing business to so great an extent as to have to draw from every colony to supply that business, my average yield of comb honey was not far from eighty pounds per colony, covering a period of over twenty years. The highest average yield in any year of the twenty was 166 pounds, and the lowest was 33 pounds.

I have not written any thing new in the above—simply tried to emphasize that which has been put before the public before, for it often seems that we mortals must be told things over and over again before we can have the right kind of knowledge beaten into us. But after a while some of us do learn, though it be something after the fashion of the man at the revival meeting. The story runs thus:

A good zealous camp-meeting brother had a habit, when praying, of "beating the air," throwing his arms about in all directions. During a revival meeting the brother succeeded in getting one of the toughest characters in town to go forward for prayer. Then he knelt beside him and began to pray for him; and every few seconds, in the energy of his effort, the brother brought his hand down on the man's head and back. The fellow stood it calmly for a while; but, the blows continuing to fall heavily, he got to dodging them, and wabbled out of reach on his knees. The man who was doing the praying had his eyes closed; but, missing the man, he wabbled after him and continued to emphasize his periods on the sinner's back. Finally, winding up his rather long petition for grace, he asked: "How do you feel now, brother?"

"Plum knocked out!" was the reply. "Ef you had any thing agin me, why did you coax me up here ter take it out o' me? Why don't you come outside, like a man, an' give me a fair show? You've knocked the devil out o' me—you have!"

"Thank the Lord for that!" exclaimed the praying brother; "that's exactly what I started out to do. The Lord be praised!"

HEADS OF GRAIN FROM DIFFERENT FIELDS

NAUGHTY BOYS AND THEIR DOLLAR-A-POUND HONEY.

I was very much interested in regard to those thieves who were disturbing those bees of yours, as I had a somewhat similar experience in the winter of 1896. In looking over my hives during a warm spell in winter I noticed one that did not seem to have any bees flying. On examining it I found two frames had been taken out of the center of the hive, and all the bees had died. Several days after, I noticed one morning a red handkerchief lying on the ground. On examining it I found several stings in it. I found another hive disturbed this time, and two of the outside frames gone. This was on a moonlight night this was done, so I concluded by the footprints and other observations that two boys who lived about half a mile away were making the disturbance. So I concluded to watch my hives every moonlight night from 7 until 10, this being the hours when boys usually visit melon-patches; and, having caught the majority of the boys within a mile of my place at one time or another viewing my melons by the light of the moon, I thought of course I could very easily take these boys in the act, knowing their habits so well; but they also had cut their eye-teeth, and took my actions into account. I watched every night except Sabbath evening, when I went to church, came home, and retired. Next morning the first thing that met my sight was a hive tipped over, two combs gone, the queen dead, and bees scattered around everywhere. I followed the boys' footprints part way home, and then concluded I would go and get a search-warrant and search the house and premises for any comb or honey. I swore out a warrant accordingly, and drove up to the house, closely followed by the constable. The first person I met was a boy who, when he saw who his visitors were, became very nervous, and told me he never bothered my bees. This was very good news to me, as I had never told any one that my bees were being disturbed. The constable proceeded to search the house, and I remained outside. He was not able to find any honey or comb in the house; but I happened to look over the garden fence, and spied a piece of brood-comb which the boys had thrown over the fence as they went into the house. This piece of comb had newly laid eggs in it. This was taken to the squire's office, in company with the boys and their father. The boys pleaded guilty, and every thing was arranged lovely. The honey they ate cost about a dollar a pound, which, considering the trouble I had, and the fun the boys had, seemed very satisfactory to all except their loving parent who paid the bill.

Sharpsville, Pa., May 16. Jno. Dallas.

DUCKS AND BEES; NOT A CONGENIAL COMBINATION.

I keep from 150 to 200 ducks all the time, but have to keep up my flock by buying grown ducks, as I found it impossible to raise young ones on account of being killed by bee-stings. The few that I do raise I keep in a brooder-house all the time until they are large. One day last week six ducks, about half grown, got out of the house by accident. About half an hour later one of my children brought in one of these ducks paralyzed. My wife at once looked for and picked out of its throat a bee-sting, and now the duck is much better. My experience is that young ducks nearly always die when stung unless the sting is removed at once; and when they live it stops their growth for a long time. Are my bees awful cross? This I answer by saying that, if the editor ever visits me, he will have to bring a bee-veil with him, as I have not had one in my apiary for four years. Probably if J. Burr had examined closer he would have found that it was neither lack of shade nor disease that swelled the heads and throats of his ducks.

Rumford, Va., June 6. R. F. RITCHIE.

[Although we have had a number of reports to the effect that bees and ducks do well together, I will never again father the statement, for your testimony is a clincher.

A. I. R. says there is another side to this. In his travels in the South he found that there were instances where the ducks gobbled up so many bees at the entrances of the hives as to make a perceptible decrease in the strength of the colonies. Whether those same ducks had learned the art of crushing the bee before the bee uses its sting, or whether they had cast-iron throats, we can not determine.

Well, now, let us put the statement this way: In some instances bees kill ducks; in others, ducks kill the bees; and in still others, apparently, at least, there is no gobbling and no stinging, but entire harmony.—ED.]

A PRY, AND HOW MADE OF A PITCHFORK TINE.

I notice you often speak of the screwdriver as a handy tool in the apiary. The tool we like best is made of the tine of an old pitchfork. About an inch at the point is bent for a hook for pulling out frames, and the other end made wedge-shaped for prying frames apart and prying following boards over to wedge. In fact, it is the one tool we consider indispensable, as it is strong enough to pry off supers, or for any other heavy work.

Our bees are swarming, and working vigorously. We have over 250 stands.

MRS. LUCY C. SLEASE.

Rosewell, New Mex., June 6.

HOW TO ENLARGE AN ORDINARY DOVETAILED-HIVE ENTRANCE.

I have for several years enlarged the entrances to my dovetail hives by inserting under each side of the hive (loose bottom-board) a wedge-shaped strip 18 inches long by ½ inch thick and 1 inch wide, reduced to a thin point at the rear end. This is to be used on the ordinary bottom-board with a ⅜ strip. This gives you a ⅞ entrance. At close of honey season simply lift the hive at front end and take it out. This gives us a ⅞ entrance and only ⅜ from bottom-board to brood-frames at the rear. Try it. HAM SMITH.

Ionia, Mich., June 7.

[But you didn't tell whether you found that enlarging the entrance was an advantage. I assume that you do or you wouldn't write about it.—ED.]

A POOR SEASON IN OHIO.

If all localities are like this I think your bee-supply boom will soon be over. My bees, like the workers of the United States, are eating each other, so to speak. I had 12 swarms from the 14th to the 23d of May, since which time I have had nothing but starvation and destruction. My bees have destroyed the drones, to beat any thing ever seen before at this season of the year. White clover, and red too, seem to be quite abundant, but nothing "in it." The same was true of blackberry and raspberry; and even fruit-bloom yielded sparingly. What the final result will be is hard to foretell; but I predict, for this immediate section, failure. If you can get any consolation out of this you can do better than I can. I can sit and see them work, and go to sleep, they work with so little energy. I am going mad thinking about it. Last season I began with 51 moderately strong colonies, and secured 2200 lbs. of honey, and increased to 70 colonies. This spring I commenced with 68 colonies; decreased to 65, and up to date decreased last season's crop of honey 100 lbs., and I fear the worst is not over yet.

Kent, O., June 15. L. G. REID.

NO HONEY.

We are having very cool weather, and but little or no honey this year. My opinion is that thousands of hives of bees will go by the board this year, and feed for stock is very scarce, and losses in this State will be very large.

Murrietta, Cal., May 30. C. C. THOMAS.

THE U. S. B. K. U. AT OMAHA.

Editor, Gleanings:—

After thoroughly considering the matter of the next place for holding the United States Bee-keepers' Union convention, the Executive Committee have decided in favor of Omaha as the place, and probably early in October as the time; but the exact date will doubtless be fixed by those having in charge the securing of reduced railroad rates, and we are going to put the securing of these and hotel rates and place for the convention to meet in, etc., on Bro. E. Whitcomb's shoulders, for they are broad, and he is right on the ground.

A short time ago he sent me some particulars regarding rates, from which I take the following: "Every day during the exposition, tickets will be on sale from all Western Passenger Association territory to Omaha at one and one-third fare for the round trip, except their rates from the following points, which will be as follows: Chicago, $20; Peoria, $17; St. Louis, $17; Denver, $25. Tickets will be limited to return thirty days from date of sale, not to exceed Nov. 15. From June 1 to October 15 the passenger rates to Omaha from all the principal cities and towns in the United States beyond the Western Passenger Association territory will be 80 per cent of double the first-class fare. Tickets are good to return until Nov. 15, but I'm expecting (?) lower rates, for Bro. Whitcomb told the convention at Buffalo last summer that, if the Union would hold its next meeting at Omaha during the time of holding the Trans-Mississippi Exposition, we should have "as low rates as to any other place on earth." We know that Bro. Whitcomb will do his "level best" for those who attend the convention, and show us "the sights" on the Exposition grounds.

A prominent Western bee-keeper wrote me a few days ago that "the rate, however, cuts but a very small figure." Well, may be if we poor bee-keepers were all rich, like him, it wouldn't; but this is only another evidence that localities differ.

Further notice of rates, time of meeting, etc., will be given when known.

A. B. MASON, *Sec.*

Sta. B, Toledo, O., June 25.

AN APOLOGY; RAISING HIVES OFF BOTTOM-BOARDS TO INCREASE ENTRANCE.

On reading over my article in June 1st GLEANINGS I find I owe an apology to you and Dr. Miller for those unfortunate words, "think so" and "know so." I humbly beg your pardon, and desire to withdraw those words. I had reference to Dr. Miller's statement (which your comments impliedly indorsed) about raising a hive off the bottom board, when a sudden stoppage of the honey-flow had occurred, causing robbing. This is so much at variance with my experience of nearly 35 years, that I thought there must have been some cause which Dr. M. had overlooked, that set robbers going. Certainly locality could have nothing to do with it. Perhaps I did not make my meaning quite clear; but I thought Dr. M., in raising his hives, must have broken some propolis that was recent enough to emit an odor, or in some way disturbed something about the hive that created an unusual odor that attracted the robbers.

I suppose you have had some experience in hunting wild bees, and are aware that, by burning a piece of comb (that containing pollen I believe is best), you can in a short time attract bees even a mile or two on warm days when there is little honey in the flowers. My object was to get you to try raising a hive when there was little or no honey coming from the fields, and thus prove which caused the robbing sight (changed appearance) or the odor emitted. My experience is, where you raise no odor you induce no robbing, provided your bees have not been on a robbing foray. Is this right? He opened up the province; they opened up the way to open up the cavity. Up, seems to me, is a redundancy, and hardly good rhetoric, and fails to make more clear the meaning. Does not "he opened the province" give just as clear an idea of what is done?

E. S. ARWINE.

Dove, Cal., June 13.

[No apology is necessary, for I think we very nearly agree. Our differences of experiences are more apparent than real, through poverty of expression.—ED.]

INSERTING COMBS IN SECTIONS.

If, when filling sections with comb (page 353), you will warm the pieces of comb in a tin plate, it will not only save your wax, but the stove and your wife's temper when she comes home.

W. S. FRAZEUR.

Indianapolis, Ind.

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

J. D., Mich.—Some of the brood got chilled during some of the cold nights. As it died, of course the bees carried it out. Without seeing the bees I could assign no other cause.

W. H. L., Mich.—1. Milk will not injure bees. 2. It is very seldom that bees will build brace-combs from the bottom of the brood-frame to the bottom of the hive, even when the distance is two or three inches.

M. T., Ohio.—I doubt very much whether there would be much of a demand for an implement to ventilate a hive through the top. If at all, ventilation should come from the bottom, through a large entrance.

H. I., Maine.—The two causes that usually bring on dysentery are poor food and lack of protection, or both; but generally the matter of protection has more to do with the cause of this disease than any thing else. For further particulars, see the A B C of Bee Culture.

F. A. M., N. Y.—I do not think you would have any difficulty in keeping your honey candied if it is kept in a dry place. Usually the problem is how to keep it liquid. Your candied honey may, however, on the approach of warm weather, show a tendency to liquefy; but if it is kept in a cool dry place it ought to keep its condition year after year.

J. J. G., Mass.—I see no reason why you can not use the building you refer to, for a house-apiary; but of course it would have to be remodeled inside. I would suggest that you construct the interior of the building according to the plan used by F. A. Salisbury, of Syracuse, N. Y., and which is described in this journal for Sept. 1, 1895.

C. E. S., Pa.—The telephone for giving notice of a swarm is not now sold by us. You can get it of Montgomery Ward & Co., of Chicago, or Perry Mason & Co., Boston. What you need to call for is the cheap acoustic telephone. They sell them for about a dollar. These phones will answer the purpose of giving signals for swarms, but the wire should be strung around on poles through the apiary. avoid all sharp angles, and draw the wire taut.

S. E., Pa.—There is no single article for publication that will tell exactly how to prevent increase when running for honey; but there is a series of editorials on this subject in GLEANINGS, commencing about Jan. 1 of this year. The method that I recommend is, in brief, this: Give the large colonies two stories instead of one. Scatter the frames of brood between frames of foundation or empty combs. This should be done before the approach of the swarming season. In addition, the colonies should be given a large entrance, one inch deep by the width of the hive; and for safety the wings of the queen had better be clipped.

EDITORIAL BY E. R. ROOT

THE Executive Committee of the U. S. B. K. U. have decided to hold the next annual meeting at Omaha, along in the fall. For fuller particulars in regard to this, see Dr. Mason's note in Heads of Grain in this issue.

A FRIEND of mine, in a private letter, gives me this piece of consoling consolation:

> I notice you're getting your full share of being misquoted and misunderstood; but let patience have her perfect work. There's an old saying, "Every one must eat his peck of dirt," and there are some other things as well as dirt that one seems destined to have his full quota of.

WE have just received a line from George E. Hilton, that hustling bee-keeper of Michigan who is running a series of out-apiaries, saying, "My men report the plain sections a success." M. H. writes: "I have just taken off some of the new plain sections, and they are a success, sure—well filled—not too full."

We shall be glad to hear from others regarding the success or failure of these old new things. The probabilities are that some will not like them, while others will be very enthusiastic over them.

FAIR DISCUSSION.

A LITTLE private correspondence has taken place between Mr. Hutchinson, of the *Review*, and myself, on the matter of contraction, as discussed in this issue. Bro. H. winds up his letter in this fashion:

> If there is any man in the world with whom I should delight to have a good square argument, it is yourself. I think we both intend to be perfectly fair, and try to be unprejudiced, and we have great opportunities to see all sides of a subject, and to fairly understand what we are talking about.
>
> Yours truly,
>
> W. Z. HUTCHINSON.

That is just exactly the way I feel, friend H., toward you. As long as such a spirit prevails, nothing but truth can result from such a discussion. Strict fairness compels me to say that I want to be willing to take back any thing I say, just as soon as I am convinced I am wrong. Such a position, far from being a weakness, should be an element of strength in one's character, and I know Bro. H. feels the same way. Before we get through it all, I presume it will be seen that both of us are right, to a great extent, and that the truth lies somewhere between us.

TWO PROPOSITIONS; STRONG COLONIES, AND THE BEST WAY TO GET THEM.

MR. R. L. TAYLOR, of Michigan, although differing on some points with me, agrees on this; namely, that strong colonies are a desideratum; but we differ as to the *method* of securing them. Mr. Taylor believes that he can secure strong colonies in *one* brood-nest of about eight-frame capacity, by so manipulating that the brood-nest shall be full of brood. My position is, that the *average* bee-keeper will get stronger and better-working colonies in *two* eight-frame brood-nests than in one. It is very possible that Mr. Taylor and others know how to get jumbo colonies out of single eight-frame brood-nests. If so, I hope they will tell just how they do it. By this I do not fling a challenge into Mr. T.'s face that he can not tell how it is done. Personally I should like to see this matter thoroughly discussed. If I could make one brood-nest do the work of two, no one would be more enthusiastic than I. I hope the brethren will discuss this question, as it is a live one; that is, from my point of view it means dollars and dollars to the bee-keeper.

CONTRACTION—THE RIGHT AND WRONG KIND; MR. HUTCHINSON'S AND MR. TAYLOR'S CRITICISMS; LARGE HIVES, OR DOUBLE-DECKERS.

IN several issues, of late, it will be remembered I have had much to say upon the value of two-story colonies as against one-story; that the former would not only secure more honey, either comb or extracted, but were very much less inclined to swarm. On page 358 of our issue for May 1 I had something more to say on this same line. After referring to the case of the Dadants with their large hives, and to others, I spoke of contraction as a "fad," and that, some eight or nine years ago, it was all the rage; but as it seemed to result in an excess of swarming we were hearing less of it. Unfortunately I referred to the light crops Michigan bee-keepers had been having, and in that connection stated that contraction was more extensively used in Michigan than in any other State. This last statement seems almost to have had the effect of a red rag before a bull; for brothers Hutchinson and Taylor, in dissenting from some of my positions, have taken nearly nine columns to my two. In the first place, let me state that I had no intention of poking fun at the leaders of the Michigan bee-keepers; neither did I have them particularly in mind. Moreover, I did not mean to imply that contraction, however much it might have been practiced in Michigan, was wholly responsible for the light crops in that State, because I well knew that Michigan, like other States, has been having poor seasons. In evidence of this, read my last paragraph on page 358.

Bro. Hutchinson winds up by saying, "It matters little which of us, Bro. Root or myself, is right, if only we get at the truth." Just so. With such a fair understanding I will assume that there will be and can be no animosities. If any thing, there will be only honest differences. Well, then, in this fraternal spirit which has always existed between the *Review* and GLEANINGS, and which always shall exist, I trust, let us consider some of the points raised by Bro. Hutchinson and by Bro. Taylor. Mr. Hutchinson says it is evident I have "misunderstood the time and manner in which contraction of the brood-nest has been practiced;" and then he adds:

> Bro. Root, so far as I know, no none has practiced contraction of old established colonies—those that had

> their brood-nests filled with bees, brood, and honey—it was only in hiving swarms that contraction was practiced. It is *possible* that some practiced contraction with established colonies; it seems that you have understood it that way, but you are the first man I have ever met who so understood it or practiced it.

In a letter just received from Dr. Miller he writes:

> *Mr. Editor:*—Referring to what you have said about contraction, and what Bro. Hutchinson says in *Review*, page 179, it is evident that there is considerable misunderstanding. You are talking about one kind of contraction, he of another. You are wrong if you think all contraction applies to established colonies with no swarming in the case, and he is just as clearly wrong when he says, "Brother Root, so far as I know, no one has practiced contraction of old established colonies — those that had their brood-nests filled with bees, brood, and honey; it was only in hiving swarms that contraction was practiced." In a book entitled "A Year among the Bees," among other foolish things I find this, which is on page 49: "Up to the time of putting on supers, the desire has been to have the bees occupy as many combs as possible. . . . . . When it comes time to put on supers they are reduced to four or five frames." And I supposed that in general that was the kind of contraction that was practiced. After you've talked it over together I think you'll not be far apart in your views.
>
> To-day I have received from Medina *L'Abeille*, a Belgian bee-journal (in the French language), and I return inclosed a part of it. Look at page 123. Under the item "Sections," after saying that supers of sections are over the brood-nest of populous colonies, the underlined words read: "In order to force the bees to occupy them immediately, it is advisable to limit at the same time the space which the colony occupies to about two-thirds of its capacity. If this practice brings the colony to the swarming-point, the swarm is put upon a few frames."
>
> You see, there's contraction both of the full colony and the swarm, given in a journal for June, 1898, in its regular department of instruction for the care of the apiary in that month.
>
> Marengo, Ill., June 14.

When I wrote, I well knew there were two—yes, three—kinds of contraction—one practiced before the swarm and at the beginning of the honey-flow, (2) another after the swarm, and (3) still another in the fall, when preparing for winter quarters. My remarks, as Mr. Hutchinson sees, apply to the first named, because I thought it was almost exclusively practiced. I may have been wrong in my assumption; if so, Mr. Hutchinson is just as surely wrong in assuming that the second method of contraction was the only one practiced.

In addition to the fact that Dr. C. C. Miller practiced and recommended in his book contraction at the beginning of the honey harvest, and *before the swarm*, there are a good many others who practiced and recommended the same thing. If Mr. Hutchinson will turn to "Langstroth Revised" and to the A B C of Bee Culture he will find under "Contraction" the same kind that Dr. Miller refers to. If the A B C with its nearly 65,000 copies sold, has any influence with the fraternity, it is patent that a very large number would practice the very form of contraction that I was condemning. I have not time here to give references, but I have consulted the back volumes of the *Review*, the *American Bee Journal*, and GLEANINGS. The more I went over the references, the more I was convinced that contraction, when practiced at all, was usually of the kind that takes place at the *beginning* of the harvest. I did find, however, that more practiced contraction at the time of hiving swarms than I was aware of.

In the *Review* for 1890, page 63, Mr. Martin, in his second paragraph, in speaking against contraction, says: "Contract the brood-nest, and, in our experience, swarming will result." On page 214 of the *Review*, same year, C. W. Dayton tells how he contracts the brood-nest of an established colony by means of perforated zinc. On page 51, 1891, Dr. Tinker says: "We must contract the brood-nest, both during the honey-flow and during the rest of the season." The editor of the *Review*, in commenting on this, says he has seldom found it necessary to contract the brood-nest of an established colony. On page 164 of the *Review* for 1893, R. L. Taylor says, referring to the Heddon hive: "Every colony is confined, either to one or two sections of the hive, which in either case is substantially full of brood about the 20th of June." This I take to be contraction before the swarming season; but from other writings of Mr. Taylor I take it that he practices both kinds of contraction.

So on I might multiply references, both from GLEANINGS and the *American Bee Journal*, both pretty much to the same effect. I will be frank about it, and state that there are some who practice or did practice contraction at the time of hiving swarms. Among the list that I remember are J. A. Green, G. M. Doolittle, W. Z. Hutchinson, R. L. Taylor, and James Heddon; also J. Oatman.

The kind of contraction that I referred to as having been abandoned, and which I condemned as resulting in swarming, was that which was practiced at the *beginning* of the honey-harvest; and it is true that it has been almost entirely abandoned, I believe; and even the other kind of contraction that friend Hutchinson recommends, if I remember correctly, has also been given up in some instances. I think I could find quite a number of even these; but as it may take hours and even days to hunt them up, I will give only two that I ran across in the first volume of the *American Bee Journal* that I picked up. On page 9 of that volume for 1889, C. A. Bunch writes: "It seems that the bees in Indiana act differently from what they do in Michigan. . . . I hived sometimes on five Langstroth frames with mostly half-inch foundation starters. . . . The bees began to swarm, and at one time four of these swarms came out at once. . . . The only way to get out of such a dilemma was to give the bees room for eight brood-frames, which I did, and after that scarcely a swarm issued." Again, on page 217, same year, S. H. Hovis says: "I put the swarms on six frames; . . . in return for my care and trouble I expected the supers filled with nice honey in one-pound sections; but, alas! I was disappointed. Not one gave me a pound of surplus, while those in box hives had the pleasure of taking care of themselves, and gave me some surplus. . . . With these results I took in the situation, and I said to the contraction theory, 'Get thee hence.'"

Now, in opposition to this I will add that I received a letter some little time ago, and which I believe I published, referring to what I wrote on the contraction fad, saying the writer had practiced the method as advocated by W. Z. Hutchinson; was using it then, and expected to continue using it. As I said at the outset, we desire to get at the truth; and as it matters not who is right, Bro. H. or myself, I desire reports from bee-keepers, both for and against contraction at the time of hiving swarms.

Brothers Hutchinson and Taylor may prefer to use small brood-chambers and practice contraction because their locality best favors that system, yet I recall to mind a bee-keeper, N. E. Doane, of Brecksville, Mich., not forty miles from either. He believes in large colonies, and to that end uses twelve-frame hives. He claims for them, I think, that he has strong colonies, very little swarming, and very much more honey. There are others not far away who use large hives. H. S. Wheeler, of Mt. Pleasant, Mich.; John Morrison, of the same place, and J. N. Harris, of St. Louis, Mich., are other names given by our Mr. Boyden. Would it not pay Bro. Hutchinson to call upon friend Doane and some of these others, and see whether their locality is essentially different from that of Flint?

Near the close of his article, Mr. Hutchinson, referring to what I have said regarding the use of two-story colonies for comb honey, says: "Suppose, brother Ernest, that you try a few colonies with two or more stories for brood-nest, in working for comb honey, and see what it will cost you." My, oh my! Bro. H. This is no theory of mine, for I have tried it at our out-yard, and the results showed decidedly more honey than I could get from single eight-frame colonies; this I have reported in these columns; but, as I have said, I practice two methods. If the colony is very strong I let them have the two stories clear through the season. If they are of medium strength I take away one of the stories and give them the same room in supers with section honey-boxes.

But I do not depend for my facts upon our out-yard, or home yard either, for that matter. In my travels among the bee-keepers whom I meet every summer I can not help seeing some things, and one of the things that made an impression on my mind was that these big "guns" almost universally run big colonies, either in large single stories or on the double-decker idea.

R. L. TAYLOR'S CRITICISMS ON THE EDITOR'S ADVOCACY OF TWO-STORY LANGSTROTH HIVES FOR COMB AND EXTRACTED HONEY.

On page 182 of the *Bee-keepers' Review* for June Mr. Taylor has (unwittingly, I believe) made me father certain sentiments that I do not and did not believe in, or, more correctly speaking, he has taken certain propositions of mine, altered them slightly, and then pokes fun at them. He quotes me, for instance, as believing that the best solution of the swarming problem is big colonies in two-story Langstroth hives. So far so good; but he reports me as saying that the "two and three story colonies do not swarm." I may have given an unequivocal statement to that effect, but I think not. I have been careful in all that I have said on this question to qualify the point by saying that such colonies were not as *apt* to, or were less *inclined* to swarm. Indeed, in the very article he refers to, and which he criticises, I said there would be "less swarming."

Still again he says, in referring to what I have said regarding large colonies in two-story hives, "It is evident that the editor would have us believe that in some occult way those extra stories add to the numerical strength of the colonies." Now, Bro. Taylor, how could you read so much between the lines? Such a proposition is ridiculous. I might just as well try to claim that big shoes make big feet. I do believe, however, that, in the *hands of the average bee-keeper*, big rousting colonies can not develop properly in a single-story eight-frame hive, in the same way that I believe that the boy's predisposed big feet can not develop in small shoes.

It may be possible for *you* to have as much brood in one eight-frame brood-nest as two. I believe I *could* do it myself by reversing, and by wasting a great deal of time. But in saying this I do not mean to insinuate that you can not do it, either by a long or by a short process.

A neighbor of ours, Mr. George Carrington, who lives about five miles from here, obtained of us a few twelve-frame hives. He already had in his apiary quite a number of eight-framers. A few days ago he told me, quite incidentally, that the small brood-nest was altogether too small for him; that his twelve-frame colonies were rousting big ones, while his eight-frame stock seemed to be limited to the capacity of the hive. Mr. C. does not profess to be an up-to-date bee-keeper. He grows small fruit, and he says he must have a system of management by which he can expend as little labor as possible on his bees, because he desires to give most of his time to his farm and fruit. He gave it as his opinion that twelve-frame colonies or two eight-framers, one above the other, was the kind he wanted for honey.

Mr. Taylor thinks I practice contraction after all, because I sometimes remove the upper story of a two-story colony, and put in its place supers of equal capacity to sections. I do not exactly see that this is a case of contraction so much as it is a case of substitution; but call it what you may. When the colonies are not strong enough, or if the upper set of combs are well filled with honey and brood, I put on comb-honey supers. In fact, I do just as Mr. Taylor does—adapt the management of the colony to its particular needs.

Once more. Mr. Taylor seems to be a little doubtful of what I mean when I say that, in our experience at least, they, the double-deckers, would get more honey, both comb and extracted, than the smaller ones. He seems to feel that I mean *either* comb or extracted. I meant just what I said. Some of our double-deckers are run for extracted and comb honey, *both at the same time.* Off from one of them last season I remember distinctly of taking one eight-frame super of *extracting*-combs well capped over, and two *comb-honey* supers equally well capped. I do not see why we must necessarily make a colony run for *either* when it may be more convenient at times to make it produce *both*.

I am not sure that Mr. Taylor and I are so very far apart on many things. If we could "talk it over" we would see some things in the same light. Very likely if I were in his locality I would do exactly as he does. But I feel very sure of one thing; and that is, he has not read carefully all that I have said for the last year or so on the subject of large colonies and the swarming problem.

THE HONEY SEASON; A SCANT CROP; HIGHER PRICES.

UP to within a few days, at least, the honey season as reported over the country has been very indifferent, not to say poor. We have, up to within a day or two, received only a very few reports where honey was coming in to any extent; but these few report an extra honey-flow; but the localities are so scattered that, if no honey should come from now on, there will be a great scarcity of both comb and extracted honey; for in California the season has been almost a complete failure. I think I have never seen such immense areas of clover as I have this year; but for some reason or other it does not seem to "give down." Occasionally, here and there, there will be a few bees, but nothing like what we might expect if nectar were being secreted in the usual way. Our colonies at the home yard and at the basswood yard have been on the verge of starvation, and have had to be fed in order to keep brood-rearing going. Our neighbors report a similar condition with one exception, and to this exception I shall refer later on.

But since June 26th I can report for this locality, at least, a change for the better. Basswoods were never more promising than this year; and by the way the bees are roaring on the trees, and tumbling in at the entrances, it begins to make it look as if we *might* get our usual quota of honey. But the season has been so peculiar that we do not propose to count our chickens before they are hatched. But as I sit here I can see great droves of bees flying past the window and over factory buildings; and our men in the yards tell us that it begins to look like business now.

In the last few days we have received some very encouraging reports. In some cases clover seemed to be the source, and others basswood. Rains have been frequent, and copious at times; and although clover has been out some six weeks, there are still vast areas of it on the hills and pasture lands. Perhaps we shall have a second crop. An immense quantity of clover will go to seed this year, and this augurs well for next season's clover.

I have deferred the writing of this till the very last minute, so that I might be able to present to you as exact an idea of the situation as possible. Taking every thing into consideration, honey ought not to sell as low as it did last season; for I am morally sure that there will be less of it; and do not be in a hurry to rush it off to the commission men, even if you do get a little crop. As the output will be limited, prices should rule higher.

White clover, at least in the Northern and Middle States, is the main dependence for honey; and even though basswood may yield well it is confined mainly to particular localities, and would not, therefore, greatly affect the general market. In our next issue I hope to give a more exact estimate of the season.

GETTING HONEY WHEN OTHERS DO NOT; THE BOARDMAN PLAN OF FEEDING.

CHALON FOWLS, of Oberlin, who called upon us lately, and who, at the time of his visit, reported no honey, on his way back home called on Vernon Burt, a bee-keeper who needs no introduction to our readers. This is what he wrote back:

> *Friend Ernest:*—We stopped at Mr. Burt's on the way home, and saw some sections nearly completed. It was a stunner. He insinuated that your bees were not the right kind, or you didn't know the ropes, or something. CHALON FOWLS.
>
> Oberlin, O., June 24.

I had not time to go over and investigate for myself, but I got Mr. Weed to go in my place. The secret of it is this: Mr. Burt probably had no more nectar in the fields to draw from than we; but he had been feeding his bees sugar syrup *a la* Boardman until the brood-nests were *full*. As his bees had a big stock of this in reserve, they did not draw on what nectar they *did* gather from the fields for brood-rearing; but it went right into the supers. I might have known Mr. Burt would have been forehanded.

Right here, friends, is a pointer. A bee-keeper who takes advantage of good and poor seasons, and can somehow manage to get honey every year, is the chap to pattern after. I am planning to go and see him in a day or so. Mr. Weed says Mr. Burt is using deep and wide entrances, and other fancy notions.

EXPERIMENTS WITH THE NATURAL-BASE DRAWN FOUNDATION.

IT has been unfavorable to test the new product. But, judging from one colony we have been feeding, it would appear that drawn foundation with walls *more* than ⅛ inch will not give as friable and delicate a comb as that which is ⅛ inch deep or less; that is to say, when walls are deeper than ⅛ inch, the bees do not thin them down to walls of natural thickness. So far, also, tests go to show that drawn foundation having walls ⅛ inch deep, and with natural bases, is taken by the bees in preference to ordinary foundation, in every instance.

Perhaps some may think that a dollar a pound for foundation is rather expensive. So it is, but it is in the experimental stage. Even at a dollar a pound it is not too expensive to use as starters one inch deep, top and bottom; that is to say, it costs no more than ordinary foundation in full sheets, and I am of the opinion it will be better bait for the bees—far better. However, we solicit tests of it in full sheets so that we can determine whether it will be advisable to make larger dies whereby we can reduce the cost of drawn foundation so that it will be within the reach of bee-keepers.

OUR HOMES,

BY A. I. ROOT.

Do good and lend, hoping for nothing again.—LUKE 6:36.

I have told you how, every little while, my life is brightened by getting a new glimpse of some beautiful text that makes it shine out like a new planet in the heavens. For two days past I have been rejoicing over the little text at the head of this talk. Now, this text, like the one quoted in my last, is not nature—at least, not *human* nature. In fact, it is directly contrary to the *natural* man.

We have had several talks on these pages in regard to lending tools, and I still think it is a bad practice — that is, from one point of view; but the man who would shut up the door of his toolhouse, and say that he was neither going to borrow nor lend *under any circumstances*—well, such a man might prosper, but I do not think he would be a happy man. On second thought I do not believe he would prosper, after all, in the best sense of the word; for somehow or other our relations are such in these lives we are living that it is *worth* a great deal to have the sympathy and love and respect of our fellow-man. I shall have something to say about lending and borrowing tools further on; but I want to tell you first what made this little text come out so strong and bright and grand.

Let me begin by saying that GLEANINGS was started and built up to a circulation of something like ten thousand by my own humble efforts — or, at least, principally my own. When I started I felt a sort of relationship to everybody who loved the honey-bees; and I naturally wanted everybody to take and read GLEANINGS. Of course, I wanted them to subscribe and pay for it; but this latter was a rather secondary matter. After the Home Papers were started I felt doubly anxious that every one should read GLEANINGS who cared to read it, for I felt then that I had a more wonderful story to tell about "Jesus and his love" than even the stories about the wonders of the hive. Some of the older ones will remember when I said I would send it to all missionaries free of charge, and pay postage myself, provided they cared enough for it to read it. At the time I did this I did not think—in fact, it did not occur to me—that it might open up business in foreign lands.

Well, while the subscription-list of GLEANINGS was immediately under my control I was always very liberal with subscribers. We would continue sending the paper, as you may know, without orders. But when we sent it without orders, and the recipient objected to paying, I have often told him that, if it were worth nothing to him during the time it was sent without being ordered, there would be nothing to pay; and I have always been glad to see GLEANINGS started in any new community or neighborhood, or in a new family. For this reason we have always kept it going, at least for a short time, even if no money was received. Objections have been made by our people here to putting the name in type, and giving it a place in the regular list before any money at all was received. But I have always urged adherence to my original plan, not only because it might help to advertise our bee-hives, but because it would give me an opportunity of explaining to some person the meaning of these glorious little texts like the one we have to-day—"Do good and lend, hoping for nothing again."

Yesterday a man wrote me that a swarm of bees came to his place unexpectedly, and in order to get a hive he went to a neighbor who kept bees. He got a hive and some other things, and along with them some old copies of GLEANINGS, dated away back in the late '70's or early '80's. He said in his letter something like this: "Mr. Root, if you are not dead when this reaches you, and if you are still writing the Home Papers, I want to subscribe for your journal." I need not tell you that, along through the years that are past, quite a few have been led to make these scripture texts a part of their very lives by reading my little "sermons" as some are pleased to call them. So much for a preface. Now read the card below:

> *Mr. A. I. Root:* — I sent you a letter inclosing $1.00 for GLEANINGS to be sent to J. O. Mattoyaw, Mansfield. If you have not received it, please let me know.
> Savannah, O., June 15. F. P. HILL.

When the above postal came to our office I did not see it at all. It was turned over to the subscription clerk—that is, after diligent search had been made and we were satisfied that the money never reached us. If I had gotten hold of the transaction, however, I would have started GLEANINGS to our new friend the very first thing I did, and taken my chances of getting the dollar or any part of it. The clerk, however, wrote him that we did not get the money, and asked for further particulars, but did not start GLEANINGS at all. In due time came a second postal as follows:

> *Mr. Root:*—I gave a letter to our hack-man, just as he was starting for New London, containing $1.00 for subscription to GLEANINGS for J. O. Mattoyaw, Mansfield. Please send at once, and I will send you the money if not found. F. P. HILL.
> Savannah, O., June 20.

Well, I did not see this either, but I chanced to see the reply. It was to the effect that we could not put Mr Mattoyaw's name on our list until we had received some money. When I saw this reply I remonstrated. I said that GLEANINGS must be started at once, even if we never got any thing. I was then told that a recent decision had been made in our office to the effect that no name was to be put in type until some money had been received. I remonstrated again. I appealed to the heads of the proper department, and objected to the ruling that changed my time-honored custom. One reason given for the new ruling, and a very good reason too, I must admit, was that our ledger accounts were getting to be so exceedingly numerous, especially with parties comparatively unknown, that the book-keepers had petitioned that we would not open accounts unless some money was received. I said all right so far as ordinary merchandise was concerned, but urged that GLEANINGS was a different matter, and that we could afford to be liberal in giving instruction, even in bee culture. I said it was like casting bread upon the waters.

Now, I felt a little diffident, as you may naturally suppose I would, in urging that one reason why I wanted GLEANINGS to go into just as many homes as possible was that I wanted the privilege of *pleading* for the kingdom of God and his righteousness. I wanted the privilege of doing this without money and without pay. We have received pay for the part of GLEANINGS that teaches bee culture, and, if you choose, gardening, education in general, etc.; but my special department right here in this place, that I have occupied so long, I wish to publish without money and without price. I would have it in a separate sheet by itself; but it is so connected and interwoven with business generally that it can not very well be separated. I urged my point, and pleaded vehemently to be allowed to send GLEANINGS whenever anybody asked for it, and stop it only when they neglect to pay after being notified it would stop. I do not know yet whether I carried my point or not, but I think I did. Somebody was calling for me, and I hurried away; but my soul had been stirred within me, and I was groping in the dark for some scripture text to make it plainer to my partners in business just how I felt in the matter. I stopped. "Cast thy bread upon the waters." But that did not quite touch the spot. As I was hurrying along, something whispered over my shoulder a word of encouragement. Do you know that that old teacher Paul might have lost heart sometimes had it not been for the cheering and encouraging words from that great and all-powerful but invisible friend of his? Well, the words I heard were these: "Do good and lend, hoping for nothing again." I said to myself, "Why, did you ever? Is not *that* the thought exactly?" Then I kept fondly and lovingly saying them over to myself—"Do good and lend, *hoping for nothing again;*" and from that time to this I have turned with comfort and joy and *enthusiasm* to those eight little words so beautiful, so expressive. Why! I should like to march in a procession, and I would have a flag at the head of that procession, and these words should be inscribed on the banner:

DO GOOD AND LEND, HOPING FOR NOTHING AGAIN.

Dear friends, I can almost hear some of you saying, "Mr. Root, that is all very pretty to talk about; but if you lived in *our* neighborhood you would get enough of it when you went to put it into practice yourself." Do you think, dear brother, I do *not* live in "your neighborhood?" Listen:

Yesterday, June 22, we finished planting our potatoes. As there was nothing more for the double team to do after covering the last row, we separated the team and prepared to do the cultivating that was very much needed. Mr. B. told me, however, that the very cultivator we wanted had been taken out of the barn Monday, and had not been seen since. He asked me if I had not loaned it. I said I had not. I spent almost half an hour making inquiries for that cultivator. Finally I was obliged to set the horse at some other work or let him stand still in his stall because the cultivator could not be found. Somebody had borrowed it without permission, and then had kept it three or four days right during cultivating time. There were some new cultivators in the warehouse that had never been used. I was so vexed I declared I would hitch right on to one of the new cultivators in the warehouse, and tell the neighbor who borrowed the old one, when he came back with it—that is, if he ever did come back—that he had annoyed me so much he could take the old cultivator at a fair price and keep it or take the new one, just as he chose. Yes, this was after I had had a glimpse of that beautiful text. So my text was not in my mind *all* the time, after all. I thought of it pretty soon, however, and for a little time there was a battle between self and the text; but the text came out ahead. Some time after dark the man who took the cultivator without leave heard that I was scolding about it, and brought it home in a hurry. He had it a year ago by permission. This time he saw it standing in the barn, nobody using it, and he took it *without* permission, and lent it to his "brother-in-law," telling him to be sure to take it straight back just as soon as he got his garden done. Either his brother-in-law did not understand, or else his enthusiasm for keeping his promises dwindled away; so he let my cultivator stand right where he used it until I had made sufficient fuss so that somebody heard of it. When I saw the neighbor who took it I told him it was a pretty serious matter to take tools out of a man's barn, without *any sort of permission*, or without notifying anybody on the premises of what he had done; but that it was still more serious to let a tool under such circumstances drop where it was used last, or to intrust to somebody else the uncertainty of putting it back. He admitted his fault, and made a very humble apology. Now, I do not believe in letting people run over us and annoy us in that sort of way. It would not be Christianlike to do things in such a slipshod fashion; but, notwithstanding, I still hold on (and *rejoice*) in repeating over and over my beautiful text.

Some years ago a friend of mine was showing me over their handsome cemetery. He pointed to a beautiful monument, and said, "Mr. Root, that man was one of the finest horsemen in our county. He owned some of the very best horses — some whose value was away up in the thousands. He had the finest barn, and a beautiful farm. He was successful in every thing, and well-to-do; and yet he committed *suicide*." Now, I knew something of this man. He succeeded, if I am correct, because he did not lend any thing. I do not think *he* was annoyed by his neighbors borrowing tools, especially without permission. They knew better; but yet he was not happy. Do you believe a man would feel happy and satisfied after having had a sign painted and put over his toolhouse, "Do not touch these tools — I neither borrow nor lend"? It is true, he might escape some of the annoyances that you and I have (I guess that is right, dear brother, is it not?) but he does not enjoy life. He never feels like swinging his hat and giving a big boyish hurrah out of the exuberance of his spirits because he has found such a text as I have found. By the way, do you ever hear of anybody committing suicide because he was so clever and accommodating, and always helping other people? Far from it.

Sometimes people do good and lend, mostly from motives of policy. They take a sudden streak — that is, when they are candidates for office, or when you commence trading at their store, or something of that sort. But that is not according to the Savior's teaching. Notice the last clause — "*hoping for nothing* again." You are to do these things because you love humanity. You are not to consider whether it will pay or not. If people are in trouble, if you are a Christian you will enjoy helping them out of trouble. In great cities folks have a fashion of paying no attention whatever to what is going on, providing the "going on" does not bump them or hinder them in any way. Such people do not often see others who are in trouble. Sometimes I have thought that this ignoring of others was getting to be a fashion in the country. God forbid!

Then there is another part to this beautiful little text. In that wonderful closing part of the 25th chapter of Matthew, Jesus says, "Inasmuch as ye have done it unto one of the least of these." Now, when you "do good and lend, hoping for nothing again," with the proper spirit in your hearts, letting reason and common sense guide you (as a matter of course), you are doing good to *Christ Jesus himself.* Yes, you are really "lending unto the Lord."

Let us now go back to the second of the two cards I have quoted. The man who wanted us to send GLEANINGS had evidently received a dollar from some friend or acquaintance. He had been requested to send the dollar to us. The dollar is lost. Now, suppose The A. I. Root Co. had held him down to the new ruling, and told him that GLEANINGS would not be sent to anybody unless the money was paid over first. I am afraid that, under the circumstances, friend Hill would have lost faith in humanity. He might have said, "If this is the way the world goes, I do not think I shall try to accommodate people any more." You see, this man was really acting as agent for us—in fact, was helping to extend the circulation of GLEANINGS, and should have had a commission for so doing; but had I not interfered I am afraid he would not have had even a word of thanks or not even words of sympathy for the lost money. This illustrates quite vividly the difficulty of making rules that will fit all sorts of cases. The clerk in charge of the subscription department — in fact, a clerk who has charge of any department—should have discretionary power to "do good and lend," whenever it seems to him it is the right and proper thing to do for the general welfare and prosperity of the business. Every one who is employed in any sort of business ought to have, above all things, a kindly and generous feeling toward his fellow-men. He ought to be anxious, not only to be just, but he ought to have authority to be generous, especially in cases like the one given above.

It is a pretty hard matter, too, after you have consented to do a favor for a neighbor by sending his dollar to headquarters, to know, when the money is lost, that *you* have got to stand the loss. Of course, the dollar may be recovered. I wrote our friend that, in case it could not be found, he might send us fifty cents if he thought proper, and we would stand the rest of the loss. Notice, he offered to send the money over again in case it is not found. Perhaps it may be well right here to say that there has been a good deal of trouble during the past year on account of loss of money sent in a letter, and a good many times there have been hard feelings. Some will add, "Oh! I guess the money got to your office all right. If you would overhaul your clerks, or open the letters containing money *yourself*, I think there would be no trouble." We have had a few such letters, but not many of them. So many more of them have been of the other kind that my little text shines out sharp and clear. This is not only a *happy* way of getting along in the world, but it is really the most profitable way to do business. When my attention was first so strongly directed to that little text, "Love ye your enemies, do good to them that hate you," I said, "Those words came from heaven and not from earth." I said they were not man's words, but that they were the utterances of divinity; and I say again, dear brother and sister, that, even though good business men *do* tell you that the best way is to neither borrow nor lend, the words I have emphasized so strongly to-day are words *divine* and not human.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

Just as soon as our last strawberries were picked we commenced plowing them under for potatoes. And, by the way, I learned by the Weather Bureau crop reports that it is now getting to be quite customary to follow strawberries with potatoes. A few years ago people expressed surprise when I told them I could get nice potatoes when put in as late as after strawberry-picking was over. If we have a dry time as the strawberry season winds up, it is hard on berries; and, as a general thing, it is a somewhat difficult thing to work the ground. Upon the hill by the windmill it took us a good while to plow and fit the ground, and do it right; but down by the creek-bottom, on that piece where everybody told me I was wasting my money ten years ago in trying to fit it for crops, the ground just worked up beautifully; and, by the way, that piece always does give us a big crop of almost every thing we put on it. The potatoes were got in in splendid order. They were Manum's Enormous. One reason why these happened to be kept until the last was because they were the last to sprout and wilt. The boys said, when they were cutting them up, that they were just as sound and crisp as when they were put into the cellar in the fall. This is a big point in favor of Manum's Enormous. Will it have time to give us a good crop if planted as late as the last week in June? We shall see.

I am glad to tell you we have *once more* an excellent stand of crimson clover. This year we waited for rain so long that I was really afraid some of the clover seed would sprout unless it was put down in the ground too deep to germinate. There was such a quantity of crimson clover and timothy and other stuff that it was with very great difficulty we got it out of sight. In fact, I had an extra man follow the plow, to stamp the grass down under, and to turn the sods over so the roller and Acme harrow would cover up all the green stuff. When we came to planting, any thing besides the furrower and marker with its revolving steel disks would have pulled the green stuff all up on top of the ground. With this machine, however, using the same thing for a coverer, we got the seed in in pretty good shape. This tool, however, leaves a ridge of mellow dirt over the potatoes, and a furrow between the rows. Now, as we wish to scrape off the top, and fill up these furrows with the Meeker smoothing-harrow, we run the latter over the ground several days after planting, and after a rain if possible, so that the weeds may get a little start, and just before the potatoes are coming through the ground. If the smoothing-harrow scrapes the tops of some of them we do not mind it, for we think that, in the end, it does such a great amount of work so cheaply that we can stand a little harm to an occasional enterprising potato.

On my wheelrides through the country I have noticed of late a good many farmers *rolling* the potato-ground just as the potatoes were coming through. Well, there was so much trash where we turned the crimson clover under I feared that even the smoothing-harrow would roll the sods up after we had taken so much pains to get them down in good shape; so we have for this season used the roller to level off the ground. Just at the right time after a shower we propose to run the weeder lightly over the ground so as to break up the slight crust produced by the weight of the roller. By the way, the roller is a pretty good thing to smash bugs, especially when they commence on your potatoes just as they are coming through the ground. A rolling heavy enough to kill the bugs does not seem to do the potatoes very much harm, especially if they have a refreshing shower shortly after the rolling. By the way, the bugs are not nearly as bad this season, with us. I don't know whether it is because we gave them such a terrible routing last season or whether it is because this season is not a good one for bugs. It is a satisfaction, anyway, to have the upper hand of them.

By the way, the little 75-cent sprayer that I pictured on page 369 suits me better for managing potatoes, especially when there are not very many of them, than any thing else I have ever gotten hold of. In fact, our four and five dollar dusters have been used scarcely at all this season. One of our small boys has some Paris green in spoonful packets done up in his vest pocket. When his cup is empty he puts in another packet of Paris green, fills the cup with water, and goes ahead. One push of the plunger, held at the right distance from the potato-hill, fixes the bugs.

By the way, our early potatoes are all looking so exceedingly well that it is hard for me to say which variety looks best. They are on that creek-bottom ground, and the greater part are now in blossom. Red Triumph has potatoes already as large as hens' eggs, and I am inclined to think it is still going to head the list of extra-early potatoes here in the United States as it does in Bermuda. Right in the same plot we have the new Bovee, Early Andes, Early Zehr, New Queen, and, in fact, almost all that have been advertised as being remarkable for earliness and yield. The blight has not as yet struck them, or not enough to do them any harm; but I am watching anxiously, fearing it may come at any time all of a sudden. I have not yet used the Bordeaux mixture to ward off the blight. The results of the experiments in Bermuda were so varied that I have not been really satisfied it is a preventive; and yet the results of the experiments at Cornell would seem to be almost conclusive. Our potatoes that were affected by scab have all been treated with the corrosive-sublimate solution this year. In this matter of scab there are many perplexing things. Last year one of our men in the machine-shop purchased at a low price the worst lot of scabby potatoes, almost, I ever saw. It was late in the season. Our others were all disposed of. He took them home and planted them, and when it came time to dig he was greatly astonished to find a crop of clean nice handsome potatoes—not a scabby one in the whole lot. They were put in ordinary garden soil where potatoes and other things had been grown for years. Of course, this does not prove any thing unless it is that scabby seed does not *always*, at least, produce scabby potatoes.

HEALTH NOTES

BY

A. I. ROOT

ELECTROPOISE AND OXYDONOR OUTDONE.

Friend Root:—I see you have been giving those electric frauds a write-up (on the wrong side for them) in GLEANINGS for the past few years. We have one in our midst that I wish to tell you about, and should be pleased to have you publish, with comments on same.

This man is located in the beautiful little town of San Saba, in San Saba Co., Texas. He is not selling electric belts, rings, etc., but claims to have so much electricity about him that he can cure most diseases the human family is subject to by just rubbing his fingers over their clothing, near the affected parts, and in some cases by just holding his hand near them for a minute, not even touching the patient; and if it is a bad case he dips his fingers into a glass of water (which he says is pure, and he puts nothing into it), and has the patient drink it This man is one of the State Rangers, and is stationed here for the purpose of putting down a mob that is said to exist in that county. It is said that he has treated several thousand cases in the last twelve months, and charges each patient $1.00 for each treatment of rubbing his fingers over the clothing and drinking a glass of water that he has had his nasty fingers in. Of course, it's like all cases of this kind—there are hundreds of people who say that he can cure any disease, and that they have been cured by him, while I have seen many others who say he did them no good, and worse than robbed them of their money. The worst part of it is, people are coming from all parts of the State to be gulled out of their money by him. One poor fellow came all the way from Georgia to be treated by him for rheumatism in one of his legs, which had made a bad cripple of him; and after paying out many hard-earned dollars to this man Donelly (that is the Ranger's name), left just as he came, so I have been credibly informed.

I think we need officers here, and need them badly, but to put down such frauds as this, far worse than to put down any mob that has ever existed in this part of the State. What I want to know is this: Shall we who do not believe in such foolishness sit still and see such open robbery, without saying or doing a thing? or is there a law to put down such men as this? or is it possible for any one to have so much "magnetism" about him as to cure diseases on others by simply rubbing his hands over them? or is it all the patient's ignorance or imagination? The strangest part of it all is, the doctors in this town will say nothing against him or his manner of treating diseases. I am almost afraid to give my name, as I understand he threatens my sort by law for saying any thing against his way of treating diseases. L. B. SMITH.

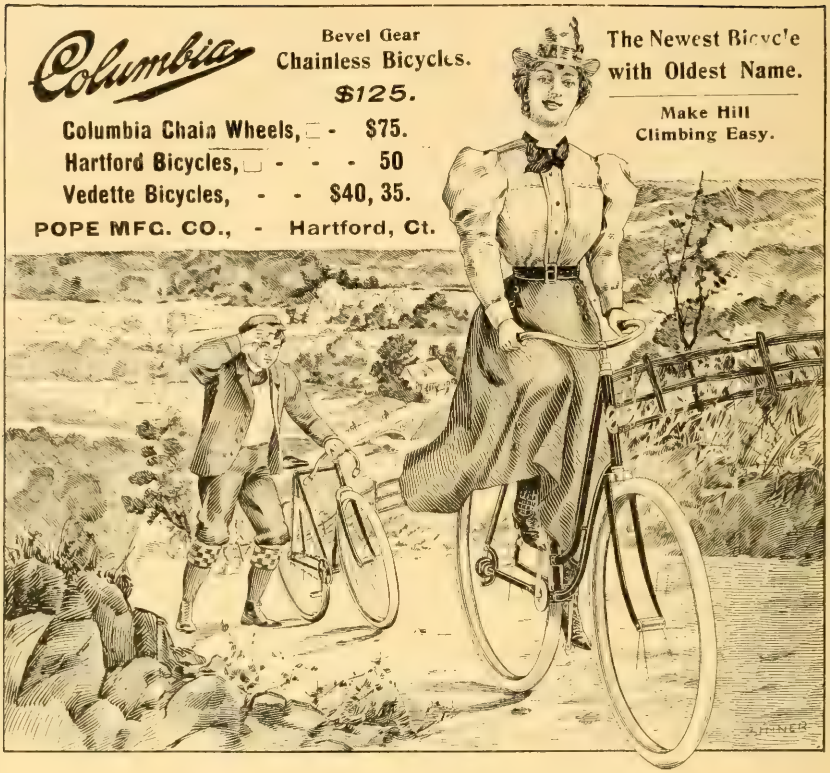
Lometa, Texas, June 9, 1898.

Friend S., I am exceedingly glad you have furnished us the above facts, for it points out at least one useful moral. If this man cures any diseases without *any* apparatus, then it is nothing strange that Electropoise cures when it has no virtue at all, and no electricity nor any thing else about it. It seems to me that such testimonials ought to open people's eyes. You need not be afraid at all to ventilate all such schemes. The man has no possible ground to prosecute you for reporting the facts as you have done, while you have an excellent chance to have him arrested for obtaining money under false pretenses, providing one—or, better, several—of his patients are willing to appear against him. We have recently had a very pleasant visit from Mr. Thomas Wm. Cowan, of London, England. In speaking to him about Electropoise and electric belts, and things of this sort, he told me of a man in England who opened a shop, and had his window filled with electric belts and other kindred appliances. Well, this man was arrested and sent to the penitentiary for obtaining money under false pretenses. The testimony of chemical, electrical, and medical experts was produced to show that the apparatus produced either no current at all, or not enough to have any perceptible effect on the disease. The physicians of your town probably have nothing to say in regard to the matter because they feel ashamed to think that such a fraud can be carried on right in a community where there are schools, books, and papers. I think these same physicians, however, would be willing to take the witness-stand (that is, if the man did not get out of sight before things got so far along) and testify that the whole proceeding was an abominable piece of fraud and superstition. The whole operation is, in fact, a sad reflection on the intelligence and civilization of the present day. By all means report such things, and have them written up; and let community club together and drive the impostors and charlatans out of town and out of the land.

YELLOWSTONE PARK "AWHEEL."

I AM just now planning for a trip through the Yellowstone Park some time in July or August; and I was wondering whether there was not one or more bee-keepers, or those who felt acquainted with me through these pages, who would care to go along. I have had the trip in mind a good many years, and I had intended to make it alone, but you know that I am rather sociably inclined. Besides, there are several reasons why company would be desirable, for it is not "misery" alone that "loves company;" and when I am enjoying seeing those great geysers play one or two hundred feet high in the air, I should want somebody to talk to. Besides, you have to wait an hour or two, more or less, to see some of them "open up." It would be rather dull waiting if you didn't have *somebody* to talk to. Any one who feels inclined to join us can find out in regard to expenses by applying to his nearest station agent. I mention it now in order that we may have time to look the matter up, and decide when to go. As the region is rather elevated, the hottest part of our summer is generally the best time for the Park—say the latter part of July or early in August. I expect to ride my chainless Columbia. And, by the way, it has been ridden daily for about six weeks past, and I have never put a screw-driver or wrench to it anywhere, and have not oiled it once, and have not even pumped up the tires; and yet it is "a thing of beauty," and promises to be a "joy for"—a long spell. Now, wait a bit. You know what I said about drinking pure water and telling the truth. Well, although *I* have never pumped up the tires, Ernest has just informed me that he pumped them up once without my knowledge. He said he thought I was riding them rather too soft. At any rate, the wheel is a model of mechanical perfection. I never expect to ride a wheel (one of my own, at least) again that has a chain. No pants-guards are ever needed, and no chain lubricant. The gearing runs in oil. I can tell that the supply of oil has not given out, because, on a very hot day, it oozes out around the crank just enough to be visible. When they get the chainless wheels down to the price of the others, my impression is that chains will go out of fashion.

Now, then, who wants to go on that trip to Yellowstone Park? If we ride our wheels, there will be no stage fare to pay; but the hotels all charge $4.00 a day. As I understand it, we can not very well get along without patronizing the hotels, unless, indeed, we should catch fish for dinner, and boil them in the hot springs, and camp outdoors in a blanket; and these very things are being done right along by some very good people.—



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The **BEE-KEEPERS' REVIEW** has added a new feature. It is called the

Department of Criticism

It is conducted by Mr. R. L. Taylor, of Lapeer, Michigan, who is a fair-minded man and a broad thinker. To this may be added years of experience in a large apiary. He also, for several years, had charge of the Michigan State Experiment Apiary, and made some of the most practical experiments ever made with bees.

Attempts at criticism are often couched in language so apologetic and "mealy-mouthed" as to nearly rob them of all force; but Mr. Taylor's criticisms are most vigorous in style, and, thus far, his main shafts have been aimed at the views and teachings of some of the most prominent writers. It is my honest belief that this department is to result in untold good by warning bee-keepers against the fallacies that will creep into the journals in spite of the best of intentions.

The editor of the *American Bee-keeper*, a man who has had years of practical experience with bees, writes me that "That new Department of Criticism is a rare morsel." In his journal he gives it the following public notice:

"In addition to its intensely critical condensed view of bee writings, by E. E. Hasty, together with other marked improvements, the *Bee-keepers' Review* has introduced a new 'Department of Criticism.' The initial C of the department heading incloses a miniature medallion half-tone of Hon. R. L. Taylor, of the Michigan State Agricultural College [He is not connected with the College now.—Ed. *Review*.], by whose very able pen the criticisms are conducted. The *Review* is indeed a unique publication—a credit to its editor and an honor to its supporters; and, in point of interest to advanced apiarists, its new department is second to none of those previously established. We are proud of our sprightly, artistic, and edifying exchange."

Special Offers.

The *Review* is $1.00 a year, but I am putting forth extra efforts for the sake of getting *new* subscribers; and to any one not now a subscriber I will, for only $1.50, send the *Review* one year and a fine tested Italian queen; or for $3.00 I will send the *Review* one year and 1000 first-class one-piece sections. The sections will be shipped from any of the following points: Flint, Mich.; Chicago, Ill.; Jamestown, N. Y.; Higginsville, Mo.; Omaha, Neb., or Medina, Ohio.

W. Z. Hutchinson,
Flint, Mich.

Fruit Packages of All kinds,

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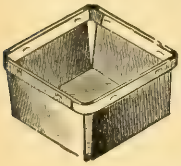

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SPECIAL NOTICES BY BUSINESS MANAGER

BEESWAX.

Although we have a very large stock of wax on hand, we will pay, for the present, 25 cts. cash, 27 in trade, for average wax delivered here. The general market at present may be a little above this figure, but it will very soon be down to this, or below.

DEEP-CELL FOUNDATION.

Besides the drawn foundation, we are just getting into operation a machine for making ordinary foundation with bases as thin as in natural comb, and walls quite a little deeper than old style. This will be, approximately, 14 to 15 feet to the pound, and the price for the present will be 75 cts. per lb. We expect to have several grades of this before next season, but are prepared now to furnish extra-thin super grade, and within a few days light-brood grade also. Sample packages containing some of this as well as the drawn foundation, mailed for 5 cents each.

CARLOAD SHIPMENTS.

As we go to press we are loading a car for our Chicago branch; one for Jos. Nysewander, Des Moines, Iowa, and one for Rocky Ford, Colo. These will be followed next week by a car to Walter S. Pouder, Indianapolis, Ind., another to our Syracuse branch, and one to Geo. E. Hilton, Fremont, Mich. We shipped Mr. Hilton half a carload about ten days ago, but he requires another car yet to finish the season with. This will contain 300 more of his chaff hives, besides sections and shipping-cases, and numerous other goods. We have also another car to go to our St. Paul branch, and a third car for Lassiter & Co., Sydney, Australia.

BUSINESS AT THIS DATE.

We are gratified to be able to announce that we are up on orders with the exception of sections and a few carloads. The number of small orders which have come to us this month has been very small compared with previous months, so that we have been able to work off the accumulation of old orders and fill most of the new ones. We still have eight or ten carloads to ship which we expect to get off within the next two weeks. These carload orders, and the few smaller orders on hand unfilled, take upward of a million sections. We are turning out 100,000 every twenty-four hours, so that we are practically a week or ten days behind yet on sections to ship orders in turn.

Unless an unusual demand starts up we ought to be close up on sections within two weeks, and we can ship orders for other goods promptly now; also for No. 1 4¼ 7-to-foot sections.

HONEY.

The prospect for a fair crop of honey in many localities seems to be better than it promised two weeks ago; yet, in spite of the heavy demand for supplies, we do not anticipate that there will be more than enough honey to go around at good prices, if the home markets are properly worked, and producers are not too anxious to sell. The price of honey ought to be a little higher than it ruled last season, to be in keeping with other food products. We are already receiving orders, and would like to hear from those who already have some ready for market, both comb and extracted. In case of extracted, send a sample by mail, and say how it is put up for shipment. If comb, describe it carefully, and say how packed, and put a price on it. We especially prefer clover honey if to be had yet.

DRAWN FOUNDATION.

It is not too late to test the drawn foundation in many places yet this season, and in order to encourage many of our readers to test it on a number of hives we have decided that, from this date, we will furnish it for $1.00 a pound, those receiving it to report results. There are from 80 to 100 pieces, right size for a pound section in a pound, so that, at this rate, the price is reasonable. It can be attached to the sections by the regular Daisy or other heated-plate fasteners. Send on your orders. We will mail quarter-pound packages for 40 cents; half-pounds for 75 cents; or send a pound prepaid for $1.25. With other goods the price will be 30 cents per quarter-pound; 55 cents per half-pound, or $1.00 a pound.

BARGAINS IN WATCHES.

We have in stock the following standard make of watches on which we quote special low prices to close. They are fully guaranteed, and in many instances could not be bought at wholesale in large quantities at prices named.

Four Ladies', 6 size, 14 K., guaranteed five years; handsome royal gold filled cases; complete with full 7-jewel "Sun Dial" movements (made by Elgin). Regular price $10.00; special, to close, $6.00.

Two Gents' 18 size, 14 K., guaranteed handsome 5-year royal gold-filled cases. Complete with full 7-jewel Sun Dial movements. Regular price $10.00; special, to close, $6.25.

One Gents' 18 size 14 K., guaranteed, 5-year gold-filled case; complete with a 7-jewel Trenton movement. Regular price $10.00; special, to close, $6.25.

Four Gents' 16 size 10 K., 15-year guaranteed gold-filled cases; complete with 7-jewel Elgin or Waltham movements. Handsome goods. Regular price $15.00; special, to close, $11.50.

Six Gents' 18 size silverine cases, complete with full 7-jewel Trenton movements; good timers. Regular price $4.00; special, to close, only $3.00.

Twelve Ladies' 6 size, made by Waterbury Watch Co., $2.50 each. Excellent timers.

Special Notices by A. I. Root.

CUCUMBERS FOR PICKLES.

There is yet time to grow them if planted this month. By the way, we furnished one company of pickle-growers 200 lbs. of cucumber seed; so we are prepared to give you the best seed at very low prices.

EXTRA-EARLY POTATOES.

Is there an earlier potato than the early Ohio? At present writing it looks as if there were several that are going to be a little ahead. The Bovee, Early Andes, White Bliss, and possibly Early Prize; Burpee's Extra Early, Early Vaughn, and New Queen promise to ripen about with the Early Ohio; Thoroughbred and Freeman a little later. All of the extra-early have now potatoes larger than hens' eggs. Several kinds that came up without being planted were carefully cultivated, but will not be any earlier than those from seed that we planted early in April.

BUCKWHEAT.

Now is just the time to sow it. In most localities July is the great month for sowing buckwheat. As it is a cold-weather plant, it is not well to get it in too early. The later you can do it, and have the grain ripen before frost catches it, the better. We have a pretty good supply in stock that we can ship promptly at the following prices: Peck, 25 cts.; ½ bushel, 45 cts.; bushel, 85 cts.; 2 bushels, $1.50. Sack is included at above prices, to ship in. Single pound by mail, postpaid, 15 cts.

POTTED STRAWBERRY-PLANTS.

Somebody asks me if our potted plants put out in July will bear next season. Yes, sir. With good care they should not only bear a full crop of fruit, but should send out runners and make half a dozen plants, more or less, that will likewise bear fruit. If you buy some of the new and high priced varieties like the Nick Ohmer, give them plenty of old well-rotted stable manure, and water when there is a dry time. If you put the old manure all around the plant you can pour the water right on the manure without any danger of having the crust of the soil bake. And this is the best way to apply liquid manure. Do not keep the plant wet all the while, however. Give it a good wetting, then let it get pretty dry; then give it another wetting. When the runners get out a sufficient length, lay a chunk of your old dark well-rotted manure on the end of the little plant, and it will soon take root. A single plant put out in July, properly cared for, should make quite a little bed of plants that will all bear fruit next season. Prices of the potted plants we have in stock will be sent on application. Layer plants will be ready by the middle of July. See our regular price list for prices of all.

STRAWBERRY-PLANTS READY TO SEND OUT IN JULY.

This year we expect to be able to furnish our regular list—Jessie, Parker Earle, Sharpless, Warfield, Bubach, Edgar Queen, and Haverland, layer plants at 15 cents for 10, or 75 cents per 100, during the month of July. We shall not be able to furnish plants by the thousand till later on. In the list above named, the last four are pistillate. We have been so much pleased with the Rio for hill culture that we shall again offer it for sale. It had the *first* large nice berries, and it gave a good yield, and some very fine ones among the very last; and for a plant that commences back so early it was remarkably prolific. The Rio will be the same price as those offered above.

Now, there are three plants—Marshall, Brandywine, and Wm. Belt, that are getting to be great favorites. These are all perfect varieties, and we can furnish them at 30 cents for 10, or $2.50 per hundred. But please notice that none of these prices include postage. If wanted by mail, add 5 cents for ten, or twenty-five per 100, for postage. The Marshall, like the Rio, is remarkable for being extra early, and at the same time it furnishes at least a few large fine berries after every thing else is gone. Shape, color, size, and flavor are all good.

Please notice, the number of plants that will be ready in July will depend greatly upon the amount of rain we receive. Of course, we are going to use water, but we can get along a good deal better if we have July showers to help. Another thing, your orders, especially for one hundred plants or more, are liable to be delayed. Orders for ten plants will, as a rule, be filled before the orders for 100; otherwise our rule will be, first come, first served. I hardly need tell you that a strawberry-plant in July is worth a good deal more than one later on. It is something like the old adage about the swarm of bees.

IF WE WANT TO IMPROVE OUR LAND, WHAT SHALL WE PUT ON OUR GROUND AS FAST AS A CROP IS REMOVED?

From now on till frost we shall be almost daily taking various crops from the soil. A high-pressure gardener does not want his land to remain idle; and sometimes he is more anxious to put on something that will benefit the soil rather than to get a crop to sell. Crimson clover is excellent where you can get it to winter. My impression is, that during the month of July a heavy growth of cow peas, or, better still, soja beans, would be worth more than the crimson clover. Some of the early varieties of these two legumes would make a lot of feed for stock, and possibly mature seed, especially in more southern localities. Buckwheat is a great renovator, and this would give the bee-keeper a crop of honey, and, if put in during this month, a crop of grain also; and crimson clover may be put in at the same time, and will come on all right after the buckwheat is off, or after the frost kills it. Now, I should like suggestions from our experiment stations and other parties who have had experience in this line. What shall we sow, and how shall we manage it in order to get our vacant ground up to a high degree of fertility?

KIND WORDS FROM OUR CUSTOMERS.

I must say, like the Dutchman, "De more I deals mit A. I. Root, de better I fint him oud."

Cooperstown, Pa., June 4. R. D. REYNOLDS.

OUR POTTED STRAWBERRY-PLANTS BY MAIL; THE NEW TRANSPLANTER.

I received the strawberry-plant, potted in jadoo fiber, to-day, and it came out of the mail as fresh and bright as when it went in. Its perfect condition causes me to want to try some others. Can you furnish me 100 Brandywine plants, potted in jadoo, at once? If not now, how soon?

The transplanting-tools ordered of you some time ago do their work perfectly. The only objection is they are rather small. Can't you have them made ½ inch larger in diameter? They won't go over our strawberry-plants without being very careful. I have used them for resetting canteloupes largely, and nine-tenths of them lived and grew right along. I have set large cabbage-plants and strawberry-plants with them on our hottest days, and they never wilted.

I loaned them to a neighbor, Mr. J. A. Westbrook, one of the largest and *the* most successful strawberry-grower in North Carolina, and he was perfectly delighted with them, and intended to order more at once.

We have marketed 50,000 32-qt. crates of berries from our little town this season. Our markets are the Northern and Northwestern cities, principally the seaboard cities

The potatoes purchased of you will be ready for market next week. I can't see any difference between them and seed I paid three times the amount for.

I have been dealing with A. I. Root for over 20 years, and in all that time I have never had a bill of goods that any thing was wrong in; never had a complaint to make, and always found every thing as represented.

Mt. Olive, N. C., May 28. J. B. OLIVER.

[Friend O., when we get over our terrible crowd of business we intend to make a larger size of transplanter. When we do we will let you know. Many thanks for your very kind words in your concluding paragraph; but I fear a good many others have not been as fortunate as you have in their deal with The A. I. Root Co., especially during this present season with its great crowd of business. We try not to misrepresent; and where a customer has been unintentionally wronged we try to do what is right; but, notwithstanding, we have quite a few differences to settle, and they are not always settled just as I should like to have them.—A. I. R.]

WANTED.—All the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa-clover-honey Cough-drops, and their 48-page illustrated honey-recipe book, "Food Value of Honey," with handsome lithograph cover. All mailed for 10 cents in stamps or silver. Representative wanted in every State and country to sell these drops. Write for wholesale price. Sample box sent for 6 cents.
R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

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QUEENS. Untested, after May 1st, 75c; 6 for $4.00. Tested, $1.00; 6 for $5.00. Breeders, $2.00. The best of stock, either Golden or Leather colored.
W. H. LAWS, Lavaca Seb. Co., Ark.
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50c. QUEENS. 50c.
Six for $2.75, or $5.00 per dozen. Warranted pure.
GEO. W. COOK, = Spring Hill, Kan.

S. C. BROWN LEGHORNS. 13 eggs, 75c; 26, $1.00; good stock. Also pure Italian bees. Circular free. H. M. MOYER, Shanesville, Berks Co., Pa.

Second-hand Wheels Cheap.

ONE LADIES' COLUMBIA.
Nearly new; been in use comparatively little, and practically the same as the '98 models; 28-inch wheels; single-tube Columbia tires, reversible steel handle-bars; weight 24 lbs.; $30.

ONE WHEEL.
Name-plate lost; gents'; maroon finish; Morgan & Wright quick-repair tires, in good order weight 25 lbs.; price $20.

ONE $150 REMINGTON TANDEM.
Gear 68 or 72; a fine machine, used but little; 1897 pattern; wood reversible handle-bars; Hartford single-tube tandem tires, practically as good as new. We offer this for an even $45.

JUVENILE WHEEL AT A BARGAIN.
High Grade, Crescent make, 14-inch frame; 18-inch wheels; good tires; an all-around good wheel, in excellent condition; can be used for either boys or girls. Cost new $40.00. We offer, to close, at the low price of $10.00.

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Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

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Daughters of best imported Italian queen mother, warranted purely mated to drones of imported stock from a different source; hence, a direct cross. Twelve years as a honey-producer on a large scale has taught me what good queens mean to the producer as well as how to rear them. Price of queens, 50 cts. each. Safe delivery and satisfaction, or money refunded.

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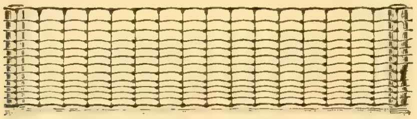

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want to be considered friendly. But they can't offer us such safety from interference as is afforded the flock by **intervention of Page fence.**

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Low-down Broad-tire Farm Trucks

originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddlers' wagons. Steel-wheel trucks, $18.

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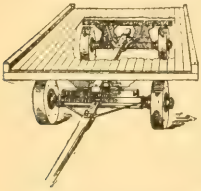

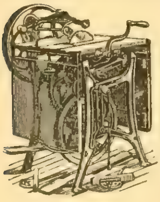

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Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

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J. ROSEN KRATZ,

Breeder of Belgium Hares, Homing Pigeons, and Dutches Pigeons.

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Prosperity

It is here, and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,

FREMONT, - - - - - MICHIGAN.

Bee-supplies.

I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.

W. E. SMITH, Kenton, Hardin Co., O.

1898 High Grade BICYCLES

for Men, Women, Girls & Boys. Complete line. *All brand new models.*

$75 'Oakwood' for $32.50
$60 'Arlington' " $24.50
Others at $15, $17 and $20
Juveniles $7.00 to $12.50

No Money in Advance. WRITE TODAY for SPECIAL OFFER.

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Honey Column.

CITY MARKETS.

NEW YORK.—Southern extracted continues to arrive in good-sized quantities. Demand is good, and fair prices are ruling. We quote common grades at 50@52 per gallon; good, 55; choice, 5@5½ per lb. Beeswax, dull. While 28c is asked, no sales can be effected at that price, and we expect a decline of about 2c per lb.

HILDRETH BROS. & SEGELKEN,
July 8. 120-122 W. Broadway, New York.

NEW YORK.—Very little old honey in our market. We have had some shipments of new Florida No. 1 comb honey which sells at 11c. Extracted honey—Southern—has been arriving very freely for the past few weeks. Demand good. We quote common 48½@50½ per gal.; good, 53@56 per gal.; choice, 5½@6 per lb. Beeswax we quote at 28@29.

FRANCIS H. LEGGETT & CO.,
July 9. Franklin and Varick Sts., New York.

KANSAS CITY.—Old stock of honey all cleaned up. A few shipments of new in market. We quote comb new No. 1 white, 11@12; No. 1 amber, 10@11; extracted white, 5@5½; amber, 4@4½; beeswax, 22@25.

C. C. CLEMONS & CO.,
July 9. Kansas City, Mo.

ST. LOUIS.—Not much doing in honey. We quote nominal fancy comb, amber, 10; white, 11; A1 amber, 9; white, 9½; No. 1 amber, 7; white, 8; No. 2 amber, 6; No. 3, 5; extracted honey in cans, amber, 4@4½; white, 5@5½; in barrels, amber, 3@3½; white, 4@4½. Beeswax, prime, 27@27½. WESTCOTT COM. CO.
July 9. St. Louis, Mo.

PHILADELPHIA.—No comb honey arriving as yet. Quite a lot of Southern amber extracted honey from Georgia and Florida, where they have a big crop, selling on arrival at 5¼@5⅜. We are producers of honey; do not handle on commission. WM. A. SELSER,
July 8. 10 Vine St., Philadelphia, Pa.

CHICAGO.—A little of the new crop is coming. It sells at 11@12 for best grades of white comb; no ambers at present on market. Extracted coming freely from the South; a little from the West. White brings 5@7; ambers, 5@6; beeswax, 27@30. We do not look for a settled price on honey before September; meantime the offerings and demand will be limited to immediate wants. R. A. BURNETT & CO.,
July 8. 163 South Water St., Chicago, Ill.

MINNEAPOLIS.—There has been a good shipping and local demand for the past six weeks. It has now slacked up somewhat, but fancy stock can still be moved at 10½@11 for comb; 5½@6 for extracted. Spot goods mostly dark and inferior.

S. H. HALL & CO.,
July 8. Minneapolis, Minn.

BOSTON.—The demand for honey is practically at a standstill, and consequently prices are nominally without change. But little stock on hand.
July 8. BLAKE, SCOTT & LEE, Boston, Mass.

HONEY WANTED.—Any parties having honey to sell will do well by writing to me, as I can't nearly supply the demand. I get 10 cts. per lb.; and, of course, any one desiring to sell to me must allow me a small profit. D. MARCUS KELLER, Abbeville, S. C.

I want prices on extracted honey in 120-lb. lots. Send sample and state kind. R. E. HUNTINGTON,
Painesville, Lake Co., Ohio.

Special Offer. For the next 90 days, we will sell warranted purely mated Italian queens at 50 cts. each; ½ doz., $2.50; tested, 60 cts. each; ½ doz., $3 00. Safe arrival guaranteed. 15 years' experience in queen-rearing.
LEININGER BROS., Fort Jennings, Ohio.
In writing, mention Gleanings.

QUEENS. Untested, 70 cents; 3 for $2 00; after July 1st, 50 cents each. Tested queens, $1.00 each. Best Italian stock. Satisfaction guaranteed by return mail.
Theodore Bender, Canton, Ohio.

QUEENS. Untested, 3 or 5 banded, 50 cts. each; 6 for $2.65, or $5.00 per dozen. Have had thirty years' experience with bees, and know how to rear the best of queens, and have as good strain of bees as can be procured in this country, and make a specialty of rearing queens; have 700; can send by return mail. This is a money-order postoffice. **Daniel Wurth,**
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QUEENS reared from the best Italian stock by the best methods. Untested 45c each, or $4.50 per dozen; tested 75c each, or 3 for $2.00. Safe arrival. Send for price list to
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QUEENS. **Warranted purely mated,** either golden or imported, by return mail. Untested, ¼ doz., $1.75; select tested, ¼ doz., $2.40; best breeders, $2.00. One **sample** queen to new customer, 55 cts. each. **E. A. Seeley, Bloomer, Ark.**
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WANTED.—By young man, position with a practical bee-keeper in an apiary Offer services to good party for board and expenses. Vicinity of New York preferred. Refer to J. H. M. Cook, bee-keepers' supply house, 62 Courtlandt St., New York City, for reference. Write to address given below or call on Mr. Cook. H. WENNSTROM,
379 Atlantic Ave., Brooklyn, N. Y.
In writing, mention Gleanings.

Bee-supplies.
I do not claim to sell cheaper than any one else, but I do claim to sell as cheap as any other firm, quality of goods considered. I keep a full line in stock. Sections and shipping-crates a specialty. Write for catalog and price list.
W. E. SMITH, Kenton, Hardin Co., O.
In writing, mention Gleanings.

Michigan Headquarters
for G. B. LEWIS CO.'S SUPPLIES, DADANT'S FOUNDATION, every thing needed in the apiary. Send for price list to
L. C. Woodman, Grand Rapids, Mich.

The A. I. Root Co.'s Goods At Their Prices.
Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted. **M. H. HUNT,**
Cash for beeswax. **Bell Branch, Mich.**

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R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

In writing advertisers, mention GLEANINGS.

QUEENS Untested, 40c; 3 for $1.00.
Warranted, 50c; " $1.25.
Tested, 75c; " $2.00.

Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.

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TESTED QUEENS.

Three or five bands now ready to mail at 75 cents each. None better. No untested queens for sale.

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TEXAS QUEENS.

Best honey-gathering strain in America. Untested, $1.00; tested, $1.50. Ready to mail April 1. Write for circular. J. D. GIVENS. Lisbon, Texas.

FOR SALE. — Good ranch for bees and general farming near San Diego, California. Price very low to make a settlement. Address
G. C. GEARN, 864 Fifth St., San Diego, Cal.

Rare Chance to get Italian Bees, 3, 4, and 5 Band.

Owing to starting two new out-apiaries this spring, and bees working unusually hard and breeding up very fast, we are in shape from now until Sept. 15th (after which we pack our bees for winter) to sell lower than we have ever offered, either three-frame nuclei, or full colonies and tested queens. We do not want to break the trade price, so ask you to write for private figures that will surprise you.

Philadelphia Office
A. I. Root Co.,
No. 10 Vine St.
W. A. Selser.

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QUEENS BY RETURN MAIL.

Daughters of best imported Italian queen mother, warranted purely mated to drones of imported stock from a different source; hence, a direct cross. Twelve years as a honey-producer on a large scale has taught me what good queens mean to the producer as well as how to rear them. Price of queens, 50 cts. each. Safe delivery and satisfaction, or money refunded.

L. H. ROBEY, Worthington, W. Va.

I HAVE NOW ON HAND

a number of breeders producing faultless 5-banded bees. If you have never had a queen of this Laws strain of beautiful honey-gathering bees you should order at once. Price $2.50 each. Warranted queens ready by return mail at usual prices. Address

W. H. LAWS, Lavaca, Seb. Co., Ark.

WANTED.—You to learn how to make crayon portraits. My book tells you how by an easy process. Can learn in a short time. Send for book or write for particulars. Price 50 cents.

W. A. BALDWIN, Artist, Medina, Ohio.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

Smoke Engine (largest smoker made.)	4-inch	stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
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Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
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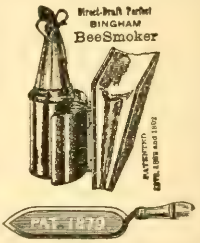
Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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In writing advertisers, mention GLEANINGS.

"Profitable Bee-keeping,"

With Hints to Beginners.

By C. N. White, of England.

A series of **nine illustrated articles,** to begin in the weekly *American Bee Journal* in July—this month. Subjects as follows:

1. **General and Introductory.** 2. **Bees.** 3. **Handling Bees.** 4. **Swarming.** 5. **Hives.** 6. **Foundation.** 7. **Supering.** 8. **Diseases.** 9. **Wintering.**

To **new subscribers** the *American Bee Journal* will be sent the last 6 months of 1898 (which will contain all of Mr. White's articles) for **only 40 cents** (stamps or silver); and for 10 cents more we will send in addition the 160-page book "Bees and Honey." Sample copy of the *Bee Journal* free. Address

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. JULY 15, 1898. NO. 14

STRAY STRAWS FROM DR C. C. MILLER

THE QUEEN-EXCLUDER was the invention of a German tailor, Hahnemann, still living in South America.

FOR HOT-WEATHER DRINK, Mrs. Collins recommends cherry phosphate sweetened with honey. It can always be on hand, even when lemons can not, and a set of thrashers gave coffee the go-by for this drink.

W. H. PRIDGEN says in his catalog that, in introducing a queen, instead of allowing her escort bees to remain with her it is an improvement to replace them with very young bees from the colony to which she is to be introduced.

A REMARK of Rambler, page 504, suggests that only adepts can move bees in California without loss. About how many colonies in a hundred are lost in ordinary California moving? I think no loss of this kind is counted on in the North.

GOTTFRIED RUMLER thinks he has thoroughly established the fact that the debris on the floor-board of the hive in winter consists largely of the bees' excrements, and that the normal, healthy bee always, and as often as occasion requires, discharges its feces in dry and solid form.—*Bienen-Vater.*

M. DEVAUCHELLE says that not only does the queen diminish her laying in the fall, but the workers themselves cease caring for the brood. In August or September one finds eggs and sealed brood, but no unsealed brood, and that for fifteen or twenty days. But he says heavy feeding in the fall will continue the laying.

"IF I WERE in your position I should not know but that some time I might wish to run for extracted honey exclusively, or very largely, at least. Then how about those metal spacers on the uncapping-knife?" (Footnote, p. 502). That's a good bit like advising me to trade off my trim little roadsters for a pair of Clydes because some time I might want to draw a heavy load. But the spacing-nails don't interfere such a great deal, after all. When uncapping you have to look out only for two nails at the upper end—none on the other end.

"INSTEAD OF the queen laying her eggs on the outside of the cluster, she lays them in the center of the brood-nest, where they should be." That "where they should be" raises the question whether Nature's plan of enlarging the brood-nest in spring is all wrong. [Whom are you quoting, doctor? I dare not say that I wrote nothing of that sort. If I did, I do not subscribe to it now.—ED.]

THE LARGE WAX-MOTH is generally supposed to be the only one that does much mischief. R. Kaempf says that, after years of observation, he is sure the small kind (*Galleria alvearia*) is much more destructive. It lives mainly on the cappings of brood. [Our apiary is made up so thoroughly of Italians that the wax-moth of either kind is no more feared than so many flies. From our experience I can not tell which is the more destructive.—ED.]

A VALUABLE BOOK for beginners would be one containing all the plans and inventions that have been tried and given up in the past—save lots of disappointments. But it would make a big volume. [Yes, it would be a good thing; but the demand for them would be small. The average bee-man does not begin to suspect how we poor publishers are pestered with drawings and models of old things that have been invented over and over again, and as often discarded. But the most unpleasant feature about the whole business is that they will go ahead and patent them without asking the opinion of some practical bee-keeper.—ED.]

COLD WATER is better fresh, every one knows; but not every one seems to know that *hot* water is very much better fresh. Whether for drinking clear or in coffee or in any other hot drink, it is much better when first brought to a boil, or as hot as wanted, than when it has stood and stewed till all the gases are gone, leaving it flat and unpalatable. [You are just right, doctor. I wish more of our sick and ailing people would study more into the merits of the hot-water treatment. A good many believe it is a good thing, but drink it at mealtime, or within half an hour of it, making an indigestible slop of the food. It should be all of an hour before taking food. When the water has passed from the stomach then the food can be properly digested —Ed.]

"NEVER APPROACH bees when sweaty, because it makes them ill-natured," is a bit of advice given in *Le Progres Apicole*. May be good advice for amateurs, but those who must work all day long and every day at their bees can hardly heed it. [I know this advice is often given, but I could never see that bees were more inclined to sting when the apiarist was sweaty. It may be easier for the bees to run their little javelin through the epidermis when it is wet or moist than when dry. I have seen it stated, also, that bees will sting black hats more readily than hats of other colors. While I believe they have a regard for color, yet I think it has nothing to do in stirring up their fighting qualities.—ED.]

"BUT VENTILATION through the top would be too much of a good thing, would it not?" asks the editor, p. 501. I'm not at all sure of that. If I were running for extracted honey I think I'd have top ventilation, or at least some ventilation above the lower entrance. In any case I want an entrance to the upper story in hot weather when there's more than one story. The bad thing about ventilation at top is that sections near it are sealed too slowly. [It may be you are right; but is there not danger that beginners will overdo the matter in arranging for top ventilation? Spreading the brood in the spring is one of the fine arts, and beginners had better leave it alone. Is not the same thing true to a great extent regarding top ventilation?—ED.]

"ARE YOU REALLY SURE, DOCTOR, that some Italians have longer tongues than others? Trot out your evidence," says footnote, p. 502. I have no evidence of my own—have no glossometer. But I've read much evidence to that effect (and I hardly see how it could have escaped your notice). In France they told just how many millimeters' difference there was in different tongues. At Agricultural College, Mich., they say they have increased the tongue a definite amount. And how about the red-clover strains which get honey from red clover when others do not? [I am not prepared to say you are wrong, doctor. When you have time, give us the measurements of the various bee-tongues; then let our agricultural colleges investigate the matter—ED.]

MR. EDITOR, you say, p. 519, "It may be possible for *you* to have as much brood in one eight-frame brood-nest as two. I believe I *could* do it myself by reversing, and by wasting a great deal of time." I can't possibly understand that. Please tell us what kind of reversing you'd use to get into eight frames as much brood as will be found in 12 frames three-fourths full of brood. [That would be impossible, sure enough, doctor, because there would be more superficial surface in 12 frames three-fourths full than in 8 frames quite full. I did not have in mind any particular number of brood-frames nor any particular amount of brood in each frame; but I find this to be true: The queen does not like to lay in the two outside combs, especially on the outside surfaces of said combs. She will sometimes do so when she is pushed for room; but as a rule the bees will have the outside combs filled with honey before the queen gets to them. I can get, as I said, more brood in two stories, but that brood will be confined to the *inside* combs of each story. The way it often works with us is this: There will be six combs in the lower brood-nest from a half to two-thirds full of brood, and in the second story there will be four or five about equally well filled providing the queen is prolific or is not too old. Now, if I can get one hatching of bees from all these combs in a week or so *before* the honey-harvest, I find very little trouble about bees going into sections. We have heard a great deal about the difficulty of forcing bees to go into boxes; but I think the main trouble, outside of a poor honey season, is that the colonies are too weak. The hives should be fairly boiling over with bees so that they will be compelled to go into supers to get room, if for no other reason.—ED.]

EXPERIMENTS made by Prof. Plateau, in which he removed the colored parts of flowers, go to show that bees are attracted neither by the form nor the color of flowers. The showy parts of the single dahlia and other composite flowers have nothing to do with attracting bees, as formerly supposed. He thinks they are probably attracted by smell. —*Muench. Bztg*. But have not other experiments shown that bees are largely guided by sight? [Yes, indeed; Mr. F. A. Salisbury has made experiments along this line, that to me prove conclusively that bees are somewhat guided by color. It will be remembered that he uses house-apiaries. The one I saw is long, and the portico entrances are alike along the whole side of the building, except that each entrance-front is painted a different color from the one adjoining. He says he has repeatedly observed that the bees at one entrance having a particular color — say red, for instance — if they become confused at all as to their location will seek an entrance having the same color ten feet away. In other instances, I think, he placed some obstructions in front of the hives, and the incoming bees would straightway find an entrance of the same color, and not, as one might suppose, an entrance close at hand, of a color different from its own. Other instances of a similar character have been reported, and I regarded them as thoroughly conclusive. Some one has said (Darwin, I think) that the reason why flowers are of various colors is for the purpose of attracting bees. Some one else, Cheshire perhaps, states that the honey-bearing flora has but little color as a rule, and in other respects is quite inconspicuous. But they have the *nectar*, which is sufficient to make up for the loss of color; moreover, that the highly colored flowers are, as a rule, non-nectar-bearing. But nature designs that insects attracted by the color shall seek out these flowers, and mingle the pollen. *Later*:—Have just talked with A. I R. He says he proved years ago that color had as much influence as size or shape; that an old red hive he had he could move anywhere and the bees would follow it.—ED.]

GENERAL CORRESPONDENCE

SELLING COMB HONEY TO GROCERS.

Be Your Own Drummer; Work for and Expect Large Sales; Be Businesslike, and Answer Objections; Labels and Second-class Sections.

BY G. K. HUBBARD.

Concluded from last issue.

At your next call you find a man who hardly ever keeps any honey unless he gets a little occasionally from a customer.

"The times are too hard. It won't sell."

"But sometimes people buy honey because the times *are* hard."

"How so?"

"I see you have some high-priced preserves and jams on your shelves here. The trade that has been getting such goods is apt to buy 15 cents' worth of honey just because it does not feel flush enough to buy something more expensive. Or, instead of going home without candy or something that the children want and expect, a man will take home a few sections of honey and tell the children that these hard times they will have to get their sweetmeats at the table with their meals. In such cases you would sell the honey, if you had it, when you would not sell either the expensive preserves or confectionery. You are not paying store rent, and putting in your time, for amusement, but you are here to sell goods; and if the people do not find what they want here they will buy elsewhere."

"I don't think my trade would pay the price for the fancy honey, and I do not like the cheaper grade."

Removing the contrast by turning the fancy case so that the honey in it can not be seen, you reply, "This is a better grade of honey than you think. The only possible objection to it is that of color. It is just as pure and healthful, is well filled, and is in every way as good an article as the bees can make from the flowers it was gathered from. You would be surprised at the ease with which you can sell this grade of honey by mentioning its purity and flavor if any one remarks about its color. I have only three cases of this dark grade left, and I can't see how you would regret it if you would let me bring in the lot."

"I could not use three cases of it, but I believe I will try one case and see how it goes."

At your next call where you find any prospect of a sale the proprietor says, "Yes, that is fine-looking honey; but I have had it here as nice, or nicer; and when I took it home to eat I found so much filler in it that it was tough inside."

"You mean the comb foundation used in the middle, I suppose. Yes, I know some bee-keepers are very careless about this. They use an inferior grade of home-made foundation which can not be detected until the honey is cut, and it is bound to give any thing but satisfaction. We all use some foundation in order to get the combs built straight in the sections; but I am very careful to use only the best article that can be made. The foundation I use runs 12 square feet to the pound, is the purest and best to be had, and is actually thinner than much naturally built comb. In all the little points in honey production I try to keep posted, and put out as fine an article for its grade as any bee-keeper I know. If I sell you the four cases I have left, and you do not find them to be strictly all right I will take them off your hands and refund the money the first time I am over; or if you write me a line I will come promptly and get them. I am not here to-day merely to sell what honey is now needed, but to build up a trade and make an outlet for my large crop this season, and probably for other seasons."

"We always sell our honey by the frame, and we sometimes get it that is every weight and thickness, which results in a lot of culling-over, and then having to sell the last few frames at a discount, may be below cost. I see this case is pretty much all one thing, but you have irregular or partly filled frames sometimes, don't you?"

"Yes, sir; but when you buy regular-grade honey of me, that is exactly what you get. I dispose of extra thick and thin combs at some boarding-houses near home. The honey I put on the general market is cased up with the wishes of the grocer in view. Well-capped sections that will not weigh 12 ounces are cased by themselves and sold together. There are some grocers who prefer these light-weight sections because they cost less, and they prefer to sell something that goes at a small price. By having the honey in a case somewhat uniform in weight it saves the picking-over that is apt to happen when there is a great difference in either color or weight in the sections in a given case."

"But I wouldn't want to buy four cases. You would sell me one of your best grade, wouldn't you?"

"Yes; but surely one case of honey is a small matter for a man with the trade you appear to have. I should like to sell you enough to last until I come over again. Better take one case of each grade, at least."

"My trade does not go much on a poor article."

"But my dark honey is not a poor article; in fact, many bee-keepers who are not so careful with their honey would call this their best. It is a good idea to let a customer have his choice in such matters, and then you will not have people saying they can buy for a cent or two less elsewhere. It is easy for them to be deceived in quality while remembering the price. To illustrate, you probably have a great variety in price in the same kind of canned goods, and your customers make their selection. Why not give them the same chance on honey?"

He objects to the price, and wants a liberal discount if he takes two cases; but you emphasize the rebate on the cases if in good condition; tell him the last section in a case will sell as readily as the others, and that you warrant satisfaction.

You get your money, and go back to your wagon with two cases yet to dispose of. You have been to all the groceries, and are not sold out. Now you try the bakeries.

"I see you do not have any honey on sale here, yet some of the bakeries over our way sell more than some of the groceries."

"We never have any call for it."

You smile, and say, "Yet that does not prove you could not sell it. You do not have call for strawberries at this time of the year, either; but they would surely sell if you had them in sight. Probably half the comb honey that is sold is carried home because the customers are in the store on other business, and, seeing the honey, take a fancy to it and buy it. If you had this case of honey on the shelf back of you, right here in plain sight, it would not be long before some customer, taking home some fresh bread or rolls would want to take along a section or two of honey also."

"But we buy some strained honey for use in our baking, and we have some Mason jars of it on the shelf up there, you see, and it does not pay for the bother of fussing with it, for we hardly ever sell any."

"Well, I'm not much surprised, because it is not labeled, and people do not know what it is. When you strain your honey the 'poetry' is all taken out of it, as a lawyer friend of mine says. Comb honey is always attractive, will sell itself, and if other bakers do well with it I don't see how you would miss it. You can make 25 per cent on it, and whatever you make will be just that much extra to help pay rent and keep business on the move. You can rest assured that, if you had these two cases here in sight, the people would buy it. Besides it is attractive, and helps give your place a neat and filled-up appearance."

"If you want to leave one case here and let me try it I will pay you for it if it sells, and if not you can get it again some time."

"I thank you for the offer, but I can't accept it. If I should do business that way I should have to raise my prices to cover an occasional loss from failure or fire, or something else. My prices are as low as they can be for a good article, and I have to sell for cash."

"Another sale made; but the other bakeries do not care to take the remaining case, and so you go to the hustling young fellow who runs a fruit and confectionery store in a little 7 x 9 room under a stairway a few feet from the leading business corner of the place.

"You occasionally have quite a loss by your fruit spoiling on your hands. Here is an article that will make you a good percentage, and will last for years so far as its keeping qualities are concerned. The investment is absolutely a safe one because it is sure to sell, even if it does not go off with a rush."

He likes the idea first rate, and your purse is heavier and your wagon empty.

Now, do you think I have made this appear too easy? Not a bit of it, unless the market is actually glutted with an enormous crop. In that case my advice would be that, if you can not make sales after trying various places within your reach, wait a few months and try it over. You had better borrow money and hold your crop than to sacrifice it. I am sure, however, that some earnest work along this line will give you good results under almost any circumstances that you are apt to find, for conditions vary greatly in towns within a few miles of each other. I know of two cities 9 miles apart where the retail price of honey has been different by 25 to 40 per cent. You will find a good many things that are new to you if you will do some exploring along this line.

If you are fortunate enough to have a crop of honey that averages very high, you will be surprised to see how easy it is to interest people; but your lower grades should be pushed along in proportion to what you have. You do not want a lot of low-grade honey on hand, with the best all gone. The price-mark is the safety-valve. You can sell any thing if the price is right; but have your price high enough so you will have to talk it up to sell it.

One party said to me, "Your honey gives good satisfaction, and I have made a good profit on it; and any time you are over, come in and see how I am stocked."

No wonder he was pleased, for he had sold lots of it, and at prices from 20 to 25 per cent higher than I supposed he was getting, and higher than the other grocers in town were getting. He had a large and fancy trade, and was actually clearing 40 to 45 per cent on my honey.

Give your customer a square deal on grading, etc., and you will often be pleased to hear such expressions as: "Just set it right on the counter; here is your money. I am too busy to open it and look at it. The other was all right, and I will risk this being the same." "How manyhave you? Two cases of fancy and three of amber? All right; carry it to the back of the store; I'll take your word for it." "I don't know but your price is a little high; but I like the way you put it up, and it sells as well as any honey I ever bought."

You will soon get acquainted with your trade, and if you do your part you will get a top-notch price, will not hear any thing about "trade it out," will not be badgered about cutting prices, and will be treated in a friendly and businesslike way on every trip, with numerous invitations to "call again when you are over."

Once on my first call, as I set a beautiful case of honey with a three-inch glass front on a gentleman's counter, and removed the cover, he read aloud the fourteen-inch label on the front of the case, "Gathered from Orange Blossoms;" and then as he saw the 28 neat labels printed in red ink, pasted on the sections, with the snow-white honey smiling up at him from between, he slapped his hands together and exclaimed, "By jolly!" I need not tell you he has been my steady customer since, although he thought my price was high, and I knew it was high enough.

With the finest honey from clover, orange, willow-herb, sage, etc., you need not be doubtful about placing it to advantage in almost any market; and while I know that the majority of readers will not take the pains with their crops that I do, nevertheless if you will take the honey you have, and make a business-like effort something like the one above, you will find that you can dispose of it, even if that supplied by more expert apiarists does surpass yours in quality. With a first-class article you will find yourself taking too small a load to market oftener than too large.

I do not label all my honey, but I think I shall do more of it in the future. I have observed that it gives the honey a finish, and pleases the customer well enough so that I am pretty safe in counting it to bring 25 cents per case extra.

The labels cost less than three cents, and a boy will stick them for one cent per case. The cost of this is offset by using second-grade sections. I get my finest honey that I expect to label in the cheapest sections. In fact, the only advantage worth mentioning that I know of, in using snow-white sections, is in the clean appearance when the cover is removed. The labels do the same; and while I have had scores of merchants take out the sections and examine my labeled honey I never heard one remark that the sections were not the whitest. They look at the honey and not at the frame it is in. There is too much straining after "snow-white," "extra polished," etc., according to my way of thinking.

There are a good many ideas in the above that may be helpful to those who sell their crops by peddling from house to house; but in such cases the point I would emphasize is to first quote the price per case or so many sections for a dollar. If there is to be any talk about your selling just a few sections let the other party start it, or you can make the offer after your first proposition has been refused. You will never sell a case to one party by trying hard to sell 25 cents' worth. Work for large sales, and expect to make them.

Riverside, Cal.

THE NEW DRAWN FOUNDATION WITH NATURAL BASES A SUCCESS.

As much Comb as Extracted; an Interesting Experiment.

BY L. STACHELHAUSEN.

Mr. E. R. Root:—I received samples of your drawn foundation with natural base three days ago, and experimented with them at once. For the experiment I used two rows of four sections in the middle of a T super (plain section with fences). At both sides of these two rows were sections containing some honey, but not sealed as yet. Three of these eight sections had the new drawn foundation. One section had a comb drawn by the bees from foundation, but without any honey, and four sections had common foundation. The sections with the drawn foundation were arranged alternating with those containing common foundation. The honey-flow is moderate, and the colony is not very strong, but worked in sections since the beginning of the honey-flow.

The so prepared supers were given to the colony at 9 o'clock, June 25, and at half-past 10 the bees were working busily on the drawn foundation. They had gnawed down the side walls—about half (on some places more); at one spot of one section they had gnawed holes into the base of the cells. The midrib still had the glasslike appearance. At 3 o'clock the holes in the cell-bottoms were repaired, the drawn foundation fastened all round to the section; the side walls were shortened everywhere, and strengthened by that thick rim on the edge common to natural combs. At some places the cell-bottoms do not look so glassy now. The bees did not work on the common foundation at all, but had carried a little honey into the drawn comb.

At 6 o'clock in the morning, June 26, the drawn foundation looked just like natural combs. The bees did not work at all on the cell-bottoms, but they do not look glassy any more. No common foundation is worked by the bees as yet.

At 7 o'clock in the morning, June 27, the common foundation is drawn by the bees, and show the same thick rim. No honey is as yet in one of these sections, except in the drawn combs. The honey in the other sections is now about half sealed. The combs of the two different foundations look now just alike, and, in fact, at 3 o'clock I found the first honey in both kinds.

From these circumstances I can say that the bees at once commenced to work on the new drawn foundation in the same way they would work on an even extracting comb. I had the same experience with the drawn foundation of last year. They work out these foundations before they need new cells for storing honey. I am of the opinion the bees will work on these foundations with or without honey coming in.

One difficulty in raising comb honey is to start the bees to work in the sections. I am convinced they will work in a section super with drawn foundation just as they will in an extracting-super with empty combs, so I see no reason why, by the help of the drawn foundation, just as much comb honey as extracted could not be raised. Under certain conditions common foundation is drawn out and used for storing honey at the same time when natural combs are used by the bees; but the same thing is true with extracted honey; but then bait combs are necessary, and the new foundation works better than bait combs. If the new article is not too high it will be a very great help to the comb-honey producer.

Now, I have a few words to say about a matter somewhat relative to this foundation. On page 124, Feb. 15, 1898, you say in a footnote that the bees thin out the midrib of the foundation, while I am of the opinion they do not In an article in the *Southland Queen* I explained the way in which the bees build combs (the *modus operandi*); how the hexagonal form of the cells and the pyramidal form of the cell-bottom is a mechanical necessity caused by the way of manipulation, and that we do not need to suppose a *higher* instinct of bees that teaches them to solve this wonderful mathematical problem. This problem is very old; but no reasonable solution is given as yet, so far as is known by American bee-keepers. Nevertheless, my article did not pay much attention except to Dr. Miller and a Mr. Skagg, each on a quite subordinate affair. Occasionally, I said, the bees do not thin out the midrib of foundation, because, in the way they are used to build natural combs, they can not do it. That the bees do not thin the midrib of the foundation is not only my opinion based on many observations, but it is the opinion of all German and most American bee-keepers; and you say (in GLEANINGS, page 248, April 1, 1897), "We have made the statement that bees will thin down the *walls* of foundation to a natural thickness, but *seldom if ever* touch the base." It is plain now. If the bees ever thinned out the base of a foundation you did not know it on April 1, 1897. In Nov., 1897, issue of the *Southland Queen* I said the same thing except that I used the words *never* for "*seldom if ever*." How is it that you express a quite different opinion, Feb. 15, 1898, and take me to task because I had not tested the matter as thoroughly as I should have. The cross-cuts of combs you have reproduced in GLEANINGS all favor my opinion, and on the next page it seems you have changed your opinion again when you speak of the no-wall foundation.

It is always a bad thing to say that bees *never* do this or that, and I am guilty of doing this. If anybody says the bees do it anyhow, we can't prove that we are right and he is wrong, because we can possibly prove that something exists; but if we have never seen a certain thing it is no proof at all that it does not exist. In one way I have to change my opinion. While in all my experience I never observed a single case where the bees had thinned the base of foundation, it was too hasty if I said they can *not* do it. Besides the usual way in which the bees build natural combs, they work the wax in some other way in exceptional cases; for instance, when they repair small holes in combs and foundation, or if they close the last hole in sealing a honey or brood cell. So it seems not impossible that they can thin the base of foundation, and may do it in rare cases.

But different bee-keepers say they have hundreds of combs built from foundation where the bees had thinned the base to natural thickness. I think they are in most cases mistaken. What causes this mistake, I can't tell; but when the side walls are thinned and prolonged, the base looks thinner too, and it would take an exact investigation to decide the matter, for which the bee-keeper has no implements.

Cutoff, Texas, June 27.

[On receipt of the above I handed it to Mr. Weed, with the request that he attach a footnote explaining why there are little holes in the bottom of the bases, and this is what he says:

Mr. Stachelhausen's report seems so complete that it requires very little comment; but I should like to explain why some of the cell-bases were gnawed. We have had the same experience here, and in every case found it was caused by defective places in the machine, which occasionally punched holes in the base of the cells. This defect has now been nearly remedied, so that it rarely occurs. We are now beginning to build machinery for 1899, and I feel sure that the product next year will be very near perfection.

[Mr. Stachelhausen's experience with drawn foundation is almost identical with our own; but as we have an ax to grind in the matter, our *ipse dixit* might not be accepted as readily as his, or that of one who, like Mr. Stachelhausen, has no ax to grind.

With reference to the item on page 124 for this year, I was surprised to note that I said just the opposite of what I intended to say. That this is true, you will see by referring to the last paragraph of the last column on the next page, where I imply that the bees will not thin the bases, but will the walls. I meant to have said that our experience was exactly like that of Mr. Stachelhausen; hence we agree exactly. It was friend Skaggs who should have tested this matter thoroughly with a micrometer.—ED.]

JOSEPH P. ISRAEL (SKYLARK).

BY J. M. HAMBAUGH.

We were temporarily located in the Gross property for one year after our arrival in Escondido, which is situated on an elevation overlooking the city, and probably 40 rods back from the public avenue. It was but a few months after our arrival that my attention was drawn to a one-horse vehicle, slowly ascending the grade in the direction of our humble domicile. A small gray-haired bushy-faced person was clinging to the lines, and seemed intent on allowing the horse abundance of time to accomplish the task of reaching the summit, which he did successfully.

"Is your name Hambaugh?" greeted my ears in a manner that caused me to stare

I answered in the affirmative, and with outstretched hand and a smile mantling his pleasant features he responded, "You are the man I have been hunting. My name is Israel."

His horse was sheltered and fed, and he was compelled to accept of our menu, or bill of fare, for one meal. The subject of bees was the main topic, fore and aft, yet Mr. Israel's previous long experience in the business here in California made me more of a willing auditor than a pressing conversationalist. His visit here to me in a strange land, and among entire strangers, was greatly appreciated. On his departure we were kindly invited to visit him in his rural home in Spook's Canyon, which we agreed to do at the earliest convenience.

It was in June, 1896, that, with our little family snugly tucked into our surrey, we started for an outing, and determined to hunt out our old friend in the deep recesses of the somber, silent canyon. Nothing worthy of note came to our observation until the winding spiral roadway leading down into the canyon was reached. Here we go down, down, around abrupt mountains on one side and a yawning chasm on the other. Down, far below in the gulch, springs of transparent water trickle from the rocks, which nourish the fern, wild honeysuckle, and other plants that hide in the cooling shades where the sun's rays never enter.

Abruptly rising above this are shelves and piles of rocks, above which may be seen enormous boulders projecting far out of reach of the ordinary footman, and where the wild eagle is wont to hide his nest. But we must hasten.

As we near the final termination of our descent we enter a beautiful shaded live-oak grove, equipped with rostrum for a speaker, and seating capacity for an audience of several hundred. It is here that the spiritualists hold their annual camp-meeting.

In accord with instructions given us we found the unfinished adobe house, turned abruptly to the right, and half a mile up the huge canyon we reached the unpretentious domicile of our friend.

J. P. ISRAEL, THE MAN WHO HAS BROKEN THE RECORD IN COMB-HONEY PRODUCTION.

Mr. Israel's daughter was at home, being the vacation from fruit-packing, at which she is an expert, and commands a good salary in Fresno during the packing season. We found Mrs. Robinson a very pleasant and accomplished hostess.

Our reception was most cordial and hospitable, and our visit very enjoyable. Mr. Israel is a very entertaining conversationalist, and his humorous anecdotes and pioneer experiences in California are very fascinating. A synopsis of his life, as nearly as I could gather, is about as follows:

Mr. Israel related to me that, being an Israelite, he came of a warlike race. All wars of the United States—the Revolutionary War, War of 1812, and the Mexican War—had a representative from his family. The late Rebellion would have had, only the recruiting officer declared he would be killed, or run away in the first battle, and in either case a worthy citizen and most excellent soldier would be lost to the Union; therefore he was rejected, and the war prolonged at least two years.

He was born in that sooty, smoky city of Pittsburgh, Pa., Nov. 6, 1822. When quite young he went into a wholesale grocery and iron-house, and learned the business in all its details. He served under the same employer as office boy, packing clerk, shipping clerk, salesman, drummer, and collector throughout Western Pennsylvania, Ohio, West Virginia, and Illinois, until 1849, when he came to California. For two years he did some trading and mercantile business.

In 1851 he went into the mining business, but did not succeed. From thence he went to San Francisco, and was head manager for Adams & Morgan, contractors in filling in water lots. With 200 men under his supervision his salary was $16.00 per day. In 1852 he went back to his old home in Pennsylvania, but came back to California the same year, remaining until 1856, again returning to his native heath. In 1872 or '73 he chanced to get hold of a leaflet of the infant GLEANINGS IN BEE CULTURE, which inoculated his system with the bee-fever microbe, which raged with unceasing fury. He described it to me as the worst spell of sickness he was ever called upon to endure. It raged night and day. He sent immediately to A. I. Root for a nucleus colony, and started on a small scale in the business.

Nothing of a startling nature developed from his efforts in Pennsylvania, and in 1882 he moved permanently to Escondido, Cal., to follow his chosen pursuit on a more extended scale. His brother had preceded him, and had fifty colonies of bees. He took charge of them and increased them to 101 colonies. This he did on shares, half the product and half the increase. In the spring of 1883 he moved them into the country, six miles from Escondido. This proved to be the dryest year known in fifty, according to the old Spanish residents; and, through the rascality of a boy robbing them, and exciting the robbing fever, they dwindled down to 16 colonies.

The year 1884 was the reverse of the former one. More water fell during the months of February, March, and April, than had fallen during a whole winter in many preceding years. The sages and other honey-producing plants took on an enormous growth, and he increased them from 16 to 69 colonies, and harvested 10,592 pounds of comb honey in two-pound sections—an average of 662 pounds to the colony, spring count. This seems to be a big story, but Mr. Israel is willing to make affidavit to its truthfulness. Besides, there are three witnesses yet living who will testify to its correctness.

This I believe to be the largest yield of comb honey on record. An Australian, I believe, claims a yield of 700 pounds of extracted honey, which sinks into insignificance when compared with 662 pounds of comb.

Mr. Israel claims that he was merely a spectator, and had but little to do with it but to clear the way, prepare the room, and watch the honey come pouring down the mountainside like an avalanche.

The supers held 87 pounds of honey, and they were piled three and four on a hive, thus making from 261 to 348 pounds each time they were filled.

Mr. Israel has recently sold his ranch, and moved to San Diego; but notwithstanding his 76 winters he is as hale, hearty, and active as if he were a score and a half years younger, and is determined to still follow his chosen pursuit.

Long may his "Skylarkian" products appear in GLEANINGS.

PLAIN SECTIONS.

A General Discussion of the Question.

BY DR. C. C. MILLER.

It's funny to stand and look on to see how a new thing is viewed by different ones. Smith hears of a new thing, and at once is jubilant over it — knows it's just the thing — "there's millions in it." Brown hears of it, and immediately knows to a dead certainty that the entire thing is all wrong, and will bring ruin to the whole business. Yet one knows as much about it as the other—just nothing at all. Perhaps you expect me to stand before your admiring gaze as the one shining exception — a man who can see all the merits and at the same time all the demerits. No, hardly. As I think over the past I can hardly pose as such a well-balanced, philosophic personage. Many and many a time I've thought over some new plan, perhaps of my own devising, perhaps not, and the more I thought over it the more I thought it was just the thing. Untaught by the lessons of the past I'd plunge headlong into the new scheme, not carefully trying it on a few colonies but on every colony in my possession, only to find the bees couldn't possibly be induced to look at things as I had looked at them. Why can't we be level-headed, anyway?

There's the matter of plain sections — according to some, good beyond belief: according to others, bad beyond redemption. I'm not going to enter into a full discussion of the good or bad qualities of the section in question; but I'm going to *try* to take somewhat middle ground this time. I'm not going to settle at once that it's the *ne plus ultra*, and fill all my supers with that kind this year (I have 24,000 of the old kind piled up in the shop ready to go on the hives now); neither am I going to settle that there's no possible chance that I'll ever care for them; but I mean to try them on a small scale this year, then I'll know whether to go into them more deeply another year.

The chief thing that concerns me is to know whether, in the long run, I'll make or lose money by them. Some tell me they'll cost more, some say less. I don't know which to believe. One tells me they'll bring the business into disrepute, because the comb, coming so near to the wood, the grocer's fingers would pinch into the honey and set them to "bleeding." Do you know? I just swallowed that fallacy whole for a long time without recognizing that it *was* a fallacy. Suppose we look for a minute at the difference between the sections with insets and the plain sections. I use sections 1⅞ wide, and the top of a section throughout the greater part of the length is just about the same as the top of a plain section, 1½ inches. Now, are not my sections exactly the same at the top as the plain sections? Well, there's only one little difference, and I don't know whether that makes any difference in the thickness of the comb. The plain section has a fence that comes clear to the top of the section. My sections have a plain separator that lacks ¼ inch of coming to the top of the section, leaving ⅛ inch at the upper part of the comb, without separator between the two sections. In actual practice I doubt whether that makes any difference; but if there *is* any difference, my sections with the insets must have the comb built out fuller than the other, so when you grasp one of them by the middle of the top-bar the old-style sections ought to bleed the worst.

But you say, "The old-style sections are not handled by the narrow part at the middle, but at the wider part near the corners." Are they? I put this question to one who had handled thousands of sections: "When you lift a section of honey, where do you take hold of it?" After a little hesitation the answer came, "I don't know." Isn't it just a little queer that one should do a thing thousands of times without being able to say just how it is done? That reminds me of the old lady who was up as a witness, and was asked how many windows there were in a certain house. She said she didn't know.

"And yet," said the magistrate, "you say you've passed it a great many times."

"Your Honor," replied the old lady, "can you tell how many steps you go up to the place where you are now sitting?"

He was obliged to answer in the negative.

"Begging your pardon," said she, "you can't tell whether it's four or five steps you've gone up day after day for years; so it be no great wonder an old woman can't tell twice that number when she's seen them only a few months."

But, to return to the manner of handling the inset section. I said, "Stop and think. Do you take hold of the section by the narrow part at the middle, or at the wide part?"

"I think I handle it at the wide part."

I went and got a section of honey and held it out, saying:

"Now take hold of that section."

Without the least hesitation the section was lifted by the middle of the top bar, with the remark, "That's the way I handle a section." And, my highly esteemed friend who have been arguing that bleeding business to the detriment of the plain section, I'll risk my reputation as a guesser on the guess that *that* is the way you handle such a section, and that *that* is the way every grocer handles it; every

MR. AND MRS. COWAN AT OUR BASSWOOD APIARY.

bee-keeper too. Why, when you lift the first section out of a super or a shipping-case, you just *can't* take hold of it in any other way; and, as a matter of fact, you can't very well handle any of them by the corner, and, what's more to the point, I'm pretty sure you *don't*.

Then there's the argument as to the expense of separators. I am glibly told that the fence will cost the least in the long run because the plain separator is thrown away after being used only a year, and the fence lasts for years. Looks all right on the face of it, doesn't it? Let's see. A fence separator costs more than a plain separator to begin with, and it takes one more than of the plain separators in each super—say! why in the world has no one yet sprung that argument, that it takes 20 per cent more fences than separators to go with eight-frame hives? You fellows who have been so down on fences have been rather careless, haven't you? Well, the first cost of the fence is more, and I don't know any reason why a good plain separator $\frac{1}{16}$ in. thick won't last just as long as a fence; and unless there's some way of cleaning fences that I don't know any thing about, it costs more to clean a fence than a plain separator. According to that the plain separator is the cheaper.

"Yes," you say, "but I thought you always threw away your plain separators after using them once, and the fence is used year after year."

"That's all very true, but I don't see that that makes any difference."

"Why, yes; it makes a big difference; for you buy the fence only once, and the plain separator must be bought every year."

Now look here. What's the use trying to make me mad? I've heard that sort of thing all I can stand. Those who use plain separators do *not* throw them away every year, and it doesn't change the thing if they did. A uses plain separators, and cleans them every year. B uses fences, and cleans them yearly. Plainly, A has the more economical plan of the two. Now, if I can do better than A by buying instead of cleaning, and A's plan beats B's, how under the sun can B's plan beat mine?

Now, if any of you have any sticking-plaster to patch up the bruises on that "bleeding" and that "cheaper" argument, suppose you produce 'em.

Marengo, Ill.

[This article was written some little time ago, but was mislaid. Possibly by this time the doctor has had experience covering certain points upon which he has doubts.

I believe the doctor once said he threw away his separators every year. Now, if he buys new ones I can not see but they cost a good deal more than fence separators that would have to be bought only once.

As to the question of cleaning, I think the doctor has a wrong notion. It is not necessary to scrape them all over their entire surfaces. All that needs to be scraped is the cross-cleats, or that portion of the fence that comes in contact with the section; and there are certain styles of fences that will have no cross-cleats, but knife-edge projections. These can be used year after year without cleaning. Yes, doctor, it does make a difference whether the separator comes to the top of the section or not. I have some sections right before me now, in the crate, just as they came from the hive. In one lot the separators are even with the top of the sections, and in another lot they are ¼ inch down. In the last named there is a slight bulging of the combs near the tops of the sections; and in the former the faces of the combs are even, clear across the sections. When we adopted our fence separator I was decided upon one point—that it should come clear to the top of the section; for a slight bulging with plain sections would be intolerable.—Ed.]

ERRATIC BEES.

BY MRS. L. HARRISON.

One day four swarms were in the air, flew around, and then returned to their hives, without clustering. Apparently they had not made up their mind what to do. Many other swarms issued, some clustering, others not, and returned to their hives. A few were hived, remaining an hour or so, and returned singly, and not in a body. After all this fuss and feathers we have but a few new colonies.

DIVIDING SWARMS.

One day a swarm issued and clustered. While there were yet bees in the air another came out and joined them, making a mass-meeting. They were put into a hive, apparently uniting peaceably. They soon came out and filled the portico, and when I looked into the hive it was full of bees.

I procured another hive, containing empty comb, placed it by the side of the one containing the swarm, and dipped the bees from the portico in front of it, driving them in with smoke. When I returned an hour or so later I found my bees had all returned to their first love.

About sundown I thought I would try again, and if I succeeded in getting the queens the rest would follow. It was plain that they had not united, but clustered separately. This time I slipped the cover of a wash-boiler very carefully under the bottom of the cluster, and took down a bunch with a big spoon, and put them before the other hive, driving them with a little smoke. I carefully removed them all. Early next morning I found that they had remained, and there were bees in front of the other hive hunting their queen, but they soon joined their comrades. Sometimes I've had swarms unite, and, when hived in a large hive, store a large amount of surplus; but oftener they swarm out the next day, and, some returning to their former home, others entering strange hives, causing a disturbance, and a part clustering, which was hived, only to have the same performance repeated another day.

THE SEASON.

Plenty of rain and flowers, but bees have barely made a living. There has been a basswood in bloom near me since the 26th of

June, and I've paid it many visits. Some seasons this tree would be full of large black flies, but there were none this year, and only occasionally a bee among the blossoms. We've no surplus honey to date, July 1.

SWEET CLOVER.

All gravelly knolls, vacant lots, and waste places have a luxuriant growth of this plant, just commencing to bloom. My attention was directed to bees working upon it to-day. The bloom is so small it must be a tiny drop that is secreted; but by the way bees visit them it must be secreted continuously. We've never had a large amount of surplus from sweet clover, but bees work upon it a long time.

FACED GOODS.

Let's have none, be it apples, potatoes, or honey. I bought fancy Ben Davis apples for a Christmas-tree in the South, and was chagrined to find that they were only "faced." I was willing to pay the price for "fancy" for the whole package.

Peoria, Ill.

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of Percy Sharp.

The apiary shown in illustration is that of Dr. Percy Sharp, at Brant Broughton, Newark-on-Trent. Dr. Sharp is a well-known and prominent bee-keeper in his county, and also lectures on bee-keeping under the auspices of the Technical Instruction Committee of the Lincs. County Council, and holds the first-class-expert certificate of the B. B. K. S., of which association he is a member. So keen an interest does Dr. Sharp take in all that pertains to bee-keeping, that a considerable portion of his spare time is devoted to the pursuit.

In response to our request Dr. Sharp writes as follows:

"The establishment of the apiary is of comparatively recent date. Five years ago as many hives were situated in my garden, near the house and close to the stable. But the situation was then most inconvenient, with growing crops all round, and work in the immediate vicinity of the hives often seriously impeded. At the end of that year, what was then a paddock was converted into an orchard, and dug over, and to the farthest end of which, under shelter of the hedge, the bees were then removed.

APIARY OF PERCY SHARP.—FROM BRITISH BEE JOURNAL.

"Despite our good resolutions with regard to cleanliness about the apiary, time after time the weeds got the mastery, and we found it impossible, with other work on hand, to keep them cleared. Moreover, there was no proper path through the orchard, and the mud was awful. The discomforts endured when manipulating, too, were great — mud, dirt, and damp everywhere Having endured this for some time, during which my apiary increased slowly but steadily, as did my knowledge of and delight in the pursuit, I determined to make a really good stand for the hives and a firm path leading to them. I obtained from an adjacent yard about ten loads of waste and broken bricks; these were broken up, leaving, of course, the smaller pieces on the top.

"Along the end of the orchard a space was thus covered about 7 ft. wide; and down one side a path varying—owing to the irregularity of the hedge—from 4 ft. to 6 ft. wide.

"The whole was well rolled, and then, to prevent the weeds from growing through, this was sprinkled with boiling tar; and on the top of all was placed a layer of sand, and an edging of tiles round to prevent the pieces working out.

"The hives have stood, as depicted, on this path for a year now, and I have every reason to be well pleased with the result. During the past season hardly any weeds have had sufficient hardihood to penetrate the path, though, of course, some twitch grew in from the hedge-bottom at the rear edge. A further dressing of boiling tar and sand will, I hope, prevent this in future. Water drains rapidly away, and there is always cleanliness and order throughout; while any tool, small or large, accidentally dropped, is seen and recovered at once. As regards the hives themselves, they are of all shapes and patterns *outside*, but the frames and inside parts are interchangeable of course. There were at one time two styles of frames—broad-shouldered and metal-ended; the former are now, however, eliminated."—*British Bee Journal.*

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

QUEENS — HOW TO FIND.

Question.—Will you please tell me how I may know for a certainty whether a colony has a queen, and also how to find the queen if the colony has one? I hunted a colony all over to find the queen, and, finding none, concluded they were queenless; therefore I sent for a queen for them from a distance; and when I tried to introduce her, according to directions accompanying the shipping-cage, the bees killed her. Upon looking into the hive later on I found brood, so I presume they had a queen all the time.

Answer.—When settled warm weather comes in the spring, it is necessary, for the person who would be successful in bee-keeping, to know that each colony contains a prolific queen; for if a colony has no queen, or the queen in any colony should be old and failing, that colony could not be gotten in proper condition to take advantage of the honey-harvest. As the queen is mother of all the bees in a colony, she must be able to lay rapidly, so as to be able to increase the population of the hive; and if such a one is not in the hive she should be superseded by a better queen. As hinted at above, it often happens that the queen of the former season dies of old age during the winter or early spring, and in that case it is *absolutely* necessary that the apiarist know it, else the colony will perish, for the old bees die off rapidly after they commence laboring in the spring, for old age is brought upon the bees sooner or later, according to the labor they perform. There is no other way of knowing to a certainty what is going on inside, than by opening the hive and inspecting all the frames. To know if there is a queen in the hive, inspect the combs; and if no eggs or small larvæ are found in the bottom of any of the cells during April, May, June, July, August, or September, you can reasonably expect that such a colony is queenless, unless it be for from fifteen to twenty days after swarming; while if the eggs are few and scattered about, with vacant cells intervening, and without regularity, the queen is not as prolific as she should be.

To be absolutely sure that a colony is queenless (and you should be thus sure before you try to introduce a queen to it), take a frame of comb having eggs and some larvæ in it, and put it into the center of the supposed queenless colony, leaving it undisturbed for three days. If queenless, queen-cells will be formed over some of the little larvæ; and if no such cells are started, you can rest assured that they have something they are cherishing as a queen, which makes it unsafe to try to introduce another until such a "thing" is disposed of, for the new queen will surely be killed if introduction is tried.

To the accustomed eye of the practical apiarist, prolific queens are easily found, especially if the bees are of the Italian race; but a virgin queen, or an apology for a queen, is often very hard to find, even by an expert. To find a prolific queen, look for her between the hours of 9 A. M. and 3 P. M., on one of the two outside combs of the brood-nest; for it is my belief, after 25 years of practical observation, that most queens have a certain route (there are a few exceptions), which they go over every 24 hours, the queen being near the center of the brood-nest at midnight, when the temperature at the outside of the cluster of bees is coolest, and from there travels in her egg-laying toward the outside of the cluster till noon, when she commences to return, reaching the center again at midnight. The next day she does the same thing again, only going in an opposite direction, or toward the opposite side of the hive, which brings her on one of the two outside combs of brood, between the hours above mentioned.

Very early in the morning or late at night I rarely find a queen on either of the outside combs of brood, but midway between them and the center of the brood-nest, while at from 11 A. M. to 2 P. M. I find a queen on one of the outside combs of brood, nine times out of ten, providing the brood-nest is in a normal condition. If an empty comb is inserted anywhere in the brood-nest, the queen will be quite likely to be found on this comb 24 hours later; but in such a case the brood-nest would not be in a normal condition.

To find *any* queen, the best time to look is from 11 A. M. to 1 P. M., as at that time the most bees will be in the field and out of the way; and if your hives face *south*, as they should, the sun will shine obliquely into the hive, and the light thus striking the combs will show you the queen much better than at any other time. If before noon, sit or stand with your face to the west; and if after noon, face east so that the sun shall not shine in your face, and so that you will be looking on the side of the combs where the rays of the sun strike. Always have a light box, the same size as your hive, with you; and when opening the hive, do it as carefully and with as little smoke as possible; for if you are careless, and jar the hive much in opening, the bees will "go for you;" while the queen becomes excited and runs about, often off her "egg-laying ground," into the corners of the hive; and if you have to smoke the bees very much, those of the hybrid and black variety will often so "stampede" about the combs and hive that our object will be thwarted at the outset.

Having opened the hive so carefully that the bees hardly know they have been disturbed, and as carefully removed the first frame on the side of the hive next to you, look it over for the queen, if there are bees enough on it so she might be there. Having satisfied yourself that the queen is not there, set the frame on the *further* side of the box from you, and take out the next from the hive, looking it over and setting it in the box as you did the first. You now have room so you can readily look down into the hive; and on taking out another frame, glance down the side of the next one in the hive, when the queen will often be seen in her attempt to run around to the opposite or dark side of the comb, especially if she is a virgin or black or hybrid, for such queens are usually very shy. If you do not see her, immediately look on the opposite side of the comb you hold in your hands, for she will be on one of these dark sides if anywhere. In this way keep on till she is found, or all the frames are in the box. Nineteen times out of twenty I find the queen in going through the hive like this, no matter what the queen, and whether laying or otherwise; and, if in the prolific part of the season, I do not usually have to lift over two or three frames to find her, if I keep in mind something of her whereabouts, as given above. But should the queen not be found I now commence putting the combs back in the hive; and by putting them in the box the way I told you, I can look at the "dark sides" of the combs as they come from the box, the same as I did when taking from the hive, and it is a very rare thing indeed that I fail entirely to find a queen in looking over the combs, either from the hive or from the box. If such a thing as a failure should occur, the hive is closed, and a trial is made some other day.

To show something what may be done, allow me to say that I went to the out-apiary a few days ago and caged queens to prevent swarming, on the plan given in GLEANINGS a short time ago, and I made a record of ten an hour, with hives overflowing with bees, and supers to take off and adjust again.

But I will stop short here, lest the reader will say of me as Yelverton did of the preacher. A tedious preacher had preached the assize sermon before Lord Yelverton. He came down, smiling, to his lordship after the service, and, expecting congratulations on his effort, asked, "Well, my lord, how did you like the sermon?"

"Oh! most wonderfully," replied Yelverton; "it was like the peace of God—it surpassed all understanding; and, like his mercy, I thought it was about to endure for ever."

HEADS OF GRAIN FROM DIFFERENT FIELDS

RESTRICTED EGG-LAYING CAPACITY, AND SWARMING.

On page 466, June 15th issue, you publish an article on prevention of swarming. About ten years ago I tried the plan outlined, on a limited scale with ten-frame L. hives to produce comb honey. I confined the queen with zinc divisions on from two to five frames? My intention was to exchange these frames the queens were on with those from the other part of the hive when most of the brood was hatched. Every one of the colonies so treated swarmed within a week after being restricted. All methods of confining or restricting the queen have proved a failure with me. The successful bee-keeper of the future, who makes his living at producing comb honey, must produce it under "normal conditions," and he must and will be able to prevent increase, and control swarming, and this will be done without much extra labor. If the bees don't work according to your theory, reverse it. They are practical.

Normal, Ill. H. W. FUNK.

[When you restricted the queen in her egg-laying capacity, that was where you made your mistake. The plan I spoke of contemplates giving the queen all the room she can occupy. Restricted brood-rearing, no matter how large the hive, is quite liable to induce swarming.—ED.]

A NEW WAY OF DETERMINING SPECIFIC GRAVITIES OF HONEY; ROYAL JELLY IN WORKER CELLS.

Dr. C. C. Miller:—To-day I was getting royal jelly from a hive four days queenless, to feed to grafted larvæ I found nearly 100 worker-cells half filled with royal jelly, and small larvæ (1½ days hatched) floating on it. Is it workers thus reared that give us fertile workers when hives become queenless?

Lately I had a glass tumbler ¼ full of white honey. I filled it up with dark amber sun-extracted honey. In a few hours the white honey was floating serenely on top. Then I filled my tumbler ¾ full of white honey, and poured two tablespoonfuls of dark amber on top of it. Next morning the amber formed a distinct stratum at the bottom. I suppose that, as water weighs about 8 lbs. to the gallon, and good honey 12 lbs., when the sun extractor evaporates more water from it (also darkening it), its specific gravity becomes greater, and it sinks in common honey.

Why not use some 12-lb. honey mixed with some distinct coloring matter to place a little of it on top of samples of honey of which you wish to test its consistency? If the colored sinks to the bottom, we say it is below par.

Newhall, Cal., May 17. R. Wilkin.

[This letter, addressed to Dr. Miller, I gladly place before our readers. Royal jelly in worker-cells! I wonder how friend Wilkin knew it was such. The ordinary larval food in worker-cells and in queen-cells look and taste alike, but there is a chemical difference. If it is true that royal jelly may on occasion be put into worker-cells, that might account for laying workers.

Regarding the relative specific gravities of honey, I have seen in jars of extracted honey a layer of darker honey at the bottom, but I did not then suspect the cause. A honey of known specific gravity might be colored with aniline; and this could be used to determine the specific gravities of other honeys; but after all would not a gallon measure filled with honey, and weighed, show more quickly and more satisfactorily its real specific gravity?—Ed.]

BEE-SPACES FOR COMB HONEY—WHAT IS THE EXACT MEASUREMENT?

Mr. E. R. Root:—I was surprised at your criticisms on my measurements of the bee-space between the comb and separator, as, before making the statement, I went to my honey-room and measured several combs to make sure I was right, and found that every one measured just $\frac{3}{16}$; and as this exactly corresponded with previous measurements, I thought the statement absolutely correct.

This morning I have been to my honey-room to measure again, and the very first comb I measured I found the space just ¼ inch. Could it be I had blundered? I kept on measuring. The second or third comb, I found the bee-space to be only $\frac{3}{16}$, and others all the way between these figures. The average, I think, was somewhere from $\frac{20}{96}$ to $\frac{21}{96}$. As but few of these combs were finished they were, perhaps, not as full as the average. Besides, they came from an out-apiary where the bees are mostly black, which may make a difference, and I have an impression that black bees do not fill their combs as full as Italians do. J. E. Crane.

Middlebury, Vt., May 6.

[I feel quite sure I have made no error in measuring the bee-spaces in different lots of comb honey, coming as it did from all parts of the United States. As I stated in our issue for May 1, the bee-spaces varied all the way from about $\frac{1}{64}$ under to $\frac{1}{16}$ over ¼ inch. Nine out of every ten would run exactly ¼ inch. Dr. Miller wrote later that his bee-spaces ran ¼ inch.

I can account for your difference in measurement on the ground that the black bees fill out the combs a little fuller than the Italians. Some years ago some one else called attention, I think, to this very point as an argument in favor of the blacks. I wish some of our friends who have nothing but pure black bees would measure the bee-spaces in their comb-honey sections, and report the result. Let us see whether the black bees do give us fatter combs than the average hybrids and Italians.—Ed.]

BEGINNERS' QUESTION BOX BY E. R. ROOT

J. W. B., Ky.—If you have a virgin queen in the hive that won't lay, the best thing you can do is to pinch her head off. If the queen does not lay inside of a week or ten days, she probably never will lay, as there is something structurally wrong with her.

H. J. T., Ohio.—The hive to which you refer, 12 x 12 x 13, may be large enough to accommodate the swarm; but the great trouble with it is, it is not regular. You can buy standard Langstroth hives, something that is used almost universally all over the United States, for very much less money, and I would suggest that you try to get into the beaten track.

J. H. J., Pa.—It would not be practicable to move bees only fifty feet away at this time of year. If you desire to move colonies at all so short a distance it should be done in the intervening time between fall and spring; for instance, just after setting the bees out of the cellar to their summer stands. Of course, you can do something by moving the bees a little bit every day; but I would not advise attempting it.

F. M., Ind.—The black queen is at hand. By a mere inspection of her we could not tell why she does not lay. Possibly a man like Thos. Wm. Cowan or Prof. Cook might, by microscopical examination, detect something wrong with the ovaries. Queens very often fail to lay, and then the only thing to do is to replace them by one that can lay. Queens are so cheap now that it is penny wise and pound foolish to try to get along with a poor one.

C. S., Mo.—Without seeing a sample of the brood we could give you no definite information as to what the real trouble is. It may be a case of the real disease itself. I would refer you to the last paragraph or two on page 34 of catalog we are mailing you, for particulars regarding this disease. Should you send us a small sample of brood, be sure to wrap it carefully in cotton batting inside of a stout wooden box. A paper box would not do, as the package might break open and expose the disease to our bees here at Medina. The fact that you do not find any honey in the hive is nothing unusual this season. It may be that your bees have no honey to get anywhere; and it may be, also, that they are on the verge of starvation and that the brood is dying.

EDITORIAL
BY
E.R. ROOT

DOOLITTLE has given us some valuable suggestions on how to find the queen, elsewhere. He says that early in the morning the queen is in the center of the brood-nest; that from 11 to 2 o'clock he finds her on one of the outside combs of brood, nine times out of ten; but the best time to look for the queen is from 11 to 1. His article will bear a careful reading, and I should like to hear from others as to the best and shortest way to find her majesty. If it can not be done by machinery, what is the easiest way to do it with the eyes and fingers?

BEE CULTURE IN CUBA.

MR. O. O. POPPLETON, now of Stuart, Fla., and formerly of Cuba, has, it seems, been having showered at him a series of questions relative to bee-keeping on that island that just now seems to be the center of interest throughout the wide world. Mr. Poppleton writes us that his old eye trouble, which has been somewhat worse than usual, absolutely prevents him from answering letters fully enough to be of much value. Indeed, it is almost a physical impossibility to give them any attention whatever. After the war is over we may send Rambler or somebody else to write up bee-keeping in Cuba; for I have no doubt that American enterprise will do much to help develop the rich resources of that island now laid waste by the cruel hand of war.

THE WEIGHTS OF BEES, AND THE LOADS THEY CARRY.

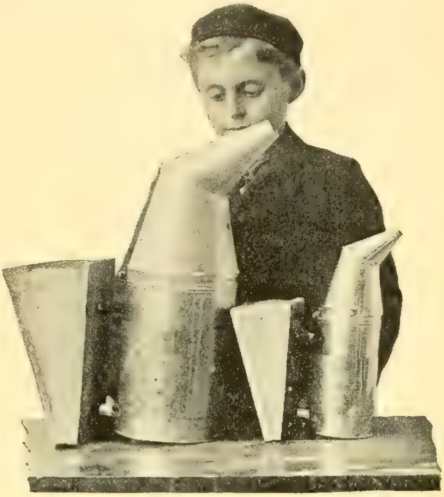
IN the published proceedings of the eighth annual meeting of the Society for the Promotion of Agricultural Science, held at Detroit, Mich., I find on page 60 an account of an interesting series of experiments, over the name of C. P. Gillette. I omit the table, but the summary is given in the last paragraph.

> According to the table there would be in a pound, on an average, 5578 unloaded worker bees; 3532 honey laden bees; 5060 pollen-bearing bees; 5447 unloaded pollen-bearers; 5394 idlers taken on the front of the hive; 2206 drones; 10,965 loads of honey; and 40,580 loads (the amount carried on both legs) of pollen.

These experiments are interesting as they confirm largely the work of others They also show what is very interesting to me, that a worker bee may carry a weight of honey equal to its own weight, and that pollen loads do not usually run more than a tenth of the weight of the bees.

A MAMMOTH JUMBO SMOKER.

SOME little time ago we had an order for two smokers somewhat larger than the regular smokers on the market. They were to be regular jumbos, and in general specifications were to be the same as our regular Crane. After they were completed they were such mammoth affairs that I thought our readers would like to see the relative differences in size. A regular standard smoker was set down on the table, and beside it one of the jumbos, and just back of it a boy twelve or fifteen years old. A photo was then taken, and the result is given below. We did not try the smokers, but have no doubt they would be a regular old Vesuvius, figuratively speaking.



I somewhat question, however, whether a smoker larger than the regular standard size, in the apiary at least, would be any better. No doubt it would give a tremendous volume of smoke; but it would be so big, awkward, and unwieldy, that the average bee-keeper would abandon it and take up his little light smoker that would give him plenty of smoke for an hour without filling.

THE LANGSTROTH MONUMENT — A SUGGESTION FROM P. H ELWOOD.

SOME days ago I received a letter from Mr. Elwood, from which I make the following extract:

> I notice what Doolittle says about the Langstroth monument. I am not in favor of costly monuments. Money can be put to better use in this world. I have just engaged a family monument for $100, and think it enough. People are getting to be extravagant in burials. If in a place where many people pass, a fine monument for Langstroth would be appropriate; but his monument is the movable-frame hive.
>
> Starkville, N. Y. P. H. ELWOOD.

It is true that the Langstroth frame is and always will be a monument to his memory. I never shared the opinion, myself, that we ought to go in extravagantly on any thing of this kind. Something costing in the neighborhood of $200, perhaps, has been about my idea of the expense that should be involved in the erection of a monument. If I am correct, we have scarcely $100 in sight, even after all that has been written and said; and, with two or three exceptions, a bee-keeper from across the water has given more than any one else. Our American bee-keepers surely ought to be willing to give at least a little. Sums of 10, 15, or 25 cents, or even a dollar, would help greatly. But a lot of "ten centses" from ten thousand bee-keepers would be a far better memorial than a few ten dollars from a few friends.

A large number of customers sometimes have an odd amount of change left in their favor after goods are paid for. We will gladly apply such amounts to the Langstroth fund whenever we receive instructions to do so. It is getting close on to the time when a monument should be selected and purchased, and therefore any funds that are to be sent in should be forthcoming at once. We stand ready to apply all 10 and 25 "centses" whenever so notified. It will cost you only a postal, and you will have a part in the recognition of the services rendered by a great and good man.

A VISIT TO VERNON BURT; HOW HE GETS COMB HONEY WHEN OTHERS DO NOT; PLAIN SECTIONS A SUCCESS; VALUE OF DEEP ENTRANCES.

Owing to a great crowd of general work I was not able to get down to friend Burt's until yesterday, the 13th. You will remember that I reported in our last issue that he was getting a crop of honey when the rest of us around here were getting no surplus; that the secret lay in the fact that he had *fed* his colonies *a la* Boardman until the brood-nests were crammed full or sealed sugar syrup and sealed brood at the opening of the harvest. The nectar, when it did come, and what there was of it, went right into the sections.

About the size of hives, Mr. Burt now decides in favor of an eight-frame brood-nest, and a single one at that. He believes in strong colonies, just as I do; but as he carries on brood-rearing *intensively* on Boardman's plan he secures powerful colonies. Of course, they swarm, as that can not very well be prevented in a single brood-nest.

DEEP ENTRANCES.

Mr. Burt is an enthusiast on the subject of deep and wide entrances, this being the third season that he has tested them. He is very positive there is less swarming, little or no clustering out, and certainly freer ingress and egress of the bees. Said he, "Just watch the bees flying in at that entrance." I lay down on my side, with my face two feet away. While in this position Mr. Burt said, "There, you see the bees land inside of the hive two inches from the hive-front. Some of them, you notice, do not even alight on the bottom-board, but by a nice easy swoop they alight up between the frames above, and you will notice, too, how they take wing clear back along about the middle of the bottom-board when they go to the fields."

As the bees were coming in heavily laden with red clover, I had a nice opportunity to verify all his statements. Some of the deep entrances were after the Danzy pattern, and some after the Pettit idea, with wedges.

"How do you like Pettit's scheme?" I said.

"It is all right," he replied. "I have tested it for two seasons, and am satisfied that the bees complete the sections on the outside rows better than where no such plan is used. You will notice how the bees strike along by the middle of the bottom-board, and that they walk either to the back end of the hive or the sides. This has a tendency to favor the outside rows of sections; and the practice is as good as the theory."

FENCES AND PLAIN SECTIONS A SUCCESS.

Mr. Burt was greatly pleased over the plain section. Said he, "You never introduced any thing that pleased me better than these. They crate well and look well." While I am writing these lines, the following is handed me, and I take pleasure in presenting it right here as it will speak for itself:

> *Mr. Editor:*—We beg leave to report on those plain sections and fence separators. This spring we bought 35 supers of the Ideal kind, with plain sections and fence separators. They were bought as a trial, and put to a test, and we are pleased to say they have stood the test very satisfactorily. We ran several colonies with them at one of our out-apiaries. The colonies were good average ones, as near like the other colonies at the apiary as possible. The bees went to work in the plain sections sooner than in the old style; and, would you believe it? up to the present time these colonies with the plain sections have produced twice as much as those with the old style. This is not guesswork, but facts, as careful records were kept, and we are ready to verify what we say. The only reason we can assign is that the plain sections and fence separators gave more perfect communication.
>
> As to the character of the honey, we will say we did not have a single bulged or washboardy section. The honey came to about 1/12 inch of the wood; and, coming so close, it made a pretty section of honey. It was advanced in the spring—that owing to the fact that the honey would come so close to the edge of the wood that it would be easier to get broken or bruised in handling than the old style. We thought the same; but after handling them filled with honey we must say that they are less apt to get broken in handling than the old style. O. P. Hyde & Son.
>
> Hutto, Texas, June 11.

Friend H. says his bees put twice as much honey in the new as in the old sections. This seems astounding; but in the generality of cases I do not suppose there will be anywhere near as much difference, and perhaps no difference will be noticed. Reports, with one exception, regarding the plain section, have all been favorable.

A POOR HONEY YEAR.

A. I. R. remarked this morning that this had been the poorest honey season he had known for many years. Reports seem to show that it comes as near being a *general* failure as any year we have ever known. But bee-keepers have had a remarkably good season in Vermont and Colorado; and we have received a few favorable reports from West Virginia and Northern California, and some from Wisconsin and Michigan. Clover generally has been a failure. Basswood has not begun to yield in proportion to the display of bloom. Peavine or red clover is yielding well wherever there is any. The bees were flying heavily at Mr. Burt's yesterday, and I notice they are going again in great droves over our factory buildings, probably from the same source.

Prices on comb honey, at least, should rule higher.

THOMAS WILLIAM COWAN.

Some of our readers will remember that Mr. Thomas Wm. Cowan, Mrs. Cowan, and their son, an electrical engineer, have been sojourn-ing in California for several months past for their health. The condition of all three has greatly improved. While Mr. Cowan, Jr., remains, Mr. and Mrs. Cowan left there a few weeks ago, stopping on their way at the homes of some of the bee-keepers of the United States. They called on Mr. York, of the *American Bee Journal*, and on Dr. C. C. Miller. In writing to Dr. Miller recently I mentioned the fact that I was enjoying a visit from Mr. and Mrs. Cowan; and in reply he writes this, which I give to our readers :

Dear Ernest:—I congratulate you heartily on the opportunity of a visit from Mr. Cowan and his wife. I do so with some intelligence after having enjoyed the treat myself. They came just at a time when work was in such shape that I couldn't stop for anybody—just couldn't stop. But I did stop for three days, and gave myself up to the abandon of thinking there was no work to be done while they were here ; and although it may take two weeks to catch up, I'm not worrying over it.

Along with a strong desire there was also just a shade of dread of the coming of two such prominent people ; but they brought with them a large stock of common sense and loving kindness, and immediately we were at ease. Mr. Cowan impresses one as a man with a wonderful fund of information, but who has hardly discovered yet that he is any better off in that respect than the ordinary mortal. It so happened that while he was here, I had sent me a letter and a newspaper clipping in a foreign language. I didn't even know what was the language—thought by the looks of the printed part that possibly it might be modern Greek. But Mr. Cowan read it off at sight. It was Russian. It made me feel I'd like to begin life over again and be a linguist.

Mrs Cowan is so simple and unassuming in her manners that just at first one is hardly ready to recognize in her a woman of unusual intellectual attainments ; but gradually the fact appears ; and, along with very clear perceptions of the truth, she is possessed with an intense zeal that others shall see the truth as she has learned to see it. My wife, who had more opportunity than I to become acquainted with her, gave as her verdict, "Mrs. Cowan is a woman that lives to do good."

The present war seems bringing closer together a good many people. At its close there will be no gap between the North and the South; and England and America, mother and daughter, will be closer than ever before. "We be brethren." C. C. MILLER.

Marengo, Ill., June 13, 1898.

The doctor's impressions of the two were exactly my own — in fact, of all Rootdom. Notwithstanding Mr. Cowan is the most talented and best informed bee-keeper living to-day, I believe, having traveled over nearly all of the civilized world; notwithstanding he reads eleven different languages, and speaks perhaps half as many; notwithstanding honors of various kinds have been conferred upon him by different societies for the advancement of science; notwithstanding he is editor of the *British Bee Journal*, and president of the British Bee-keepers' Association, he is one of the most modest men I ever met. Unassuming and quiet in his manner, one can not fail to be impressed that he is in the presence of a master of our pursuit.

Without doubt he has the most extensive library relating to bees of any man in the world. He has been all his life gathering together rare and old volumes pertaining to bees ; and it does not make any difference what language they are printed in, he reads them just the same. He pronounced some of the bee-books we have, dating back two and three centuries, as being exceedingly rare and valuable—such as, for instance, Butler's Feminine Monarchy, printed in 1609, or two years before the publication of the common version of the Bible; also Hill's treatise on bees, printed in London in 1608.

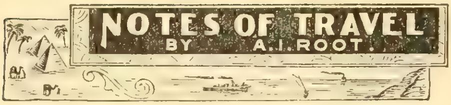
When Mr. Cowan was here in 1887 he had with him his big microscope with which he has made some of his exhaustive researches. This instrument is one of the finest in the world, and was made by Mr. Cowan himself. Father once pronounced it the finest piece of handwork he ever saw. It is described on page 715 of this journal for 1887.

I found Mr. Cowan to be well versed in all the modern and ancient practices of bee-keeping. It seemed to amuse him that so many ideas were being discovered in these latter days that have been fully described in former works. For instance, the modern starvation cure for foul brood is fully described in Della Rocca's works, written over a century ago, and printed in 1790. He was also amused at the way we Yankees have of inventing things that his countrymen invented and afterward discarded.

On the afternoon of one of the days he was here, Mr. and Mrs. Cowan, Mrs. Root, Master Leland, and myself, took a drive down to our basswood apiary. I felt that, when so distinguished a personage was here, I must not fail to take along my camera, and so I requested the privilege of a "shot" or two, which was kindly granted ; and I also asked if I might present the result of that shot to our readers. With some reservation this privilege was also granted. Mrs. Cowan is shown in the back of the buggy, Mrs. Root in front, holding the dog Trix; and Master Leland in front of Mrs. R. In the background are the basswoods. From the picture one would think it impossible to go between the trees, but such is not the case. Of course, we do not need to point out Mr. Cowan.

Mrs. Cowan is as simple and unassuming in her manners as her husband ; and the fact gradually begins to dawn on one, when he begins to know her better, that she is a woman of more than usual intellectual attainments, as Dr. Miller well says. She is a very earnest and able advocate of the doctrine that the ten tribes of Israel, after their carrying away to Assyria, 133 years before the sacking of Jerusalem (when Judah and Benjamin were taken to Babylon), were not lost by absorption into other nations. She claims that the Bible justifies us in believing that these Israelites migrated to Central Europe and became the Anglo-Saxon nation ; that England is Ephraim in prophecy, and the United States represents Manasseh ; that the religion and principles of these two nations will spread all over the world and become dominant.

It is not necessary for me to refer to the members of my own family unless it is to the dog Trix (I count her) that eats more honey than any other canine living. The other day she showed she was very fond of raw bananas and raw tomatoes ; and for taffy she has a "sweet tooth." I have not tried her yet on a chunk of comb honey, but I have no doubt she would whine for that as she does for every thing else in the sweet line.



NOTES OF TRAVEL

BY A. I. ROOT.

BIOGRAPHICAL SKETCH OF W. K. MORRISON.

Mr. Morrison is a Scotchman by birth. He kept bees to some extent in Scotland before coming to the United States, and had bees when eight years old. He left Scotland when 17 years of age. He has always been of a rambling disposition, and an enthusiastic traveler. His first stop in the United States was at Pittsburgh. Later he settled down at Bellaire, Belmont Co., Ohio, where he followed bee-keeping for about four years; and although he was right on the line of a railway that runs through Medina, for some unknown reason he never got around to make a call at the Home of the Honey-bees. After leaving Bellaire he went to Baltimore and then to other points in Maryland. Finally he got into business in a canning-factory in Greensboro, Md., where he stayed one year. Then he went to Port Royal, S. C.

W. K. MORRISON.

During these early years he spent most of the time in experimenting with things he was curious about. He finally "fetched up" at Charleston, just in time to be on hand for the earthquake; and from the conversation I had with him I think his appetite for the curious and wonderful was pretty well satisfied for a time. He says he looked down into the crevices and chasms made by the earthquake, and stayed there (as book-keeper of the Charleston Bagging Mfg. Co.) studying the matter, not only till the earthquake was all over, but until the ill-fated city was pretty well fixed up and put in running order again. Then, being curious about Florida, he visited our friend W. S. Hart, and also stopped for a time at Daytona, Fla. From Daytona he walked through the woods across the unbroken wilderness over to the west side. After staying one winter in Florida he was back again in Charleston. Of course, it needed some means to do so much traveling; and, if I am correct, the money he had brought with him from the old country (besides a good deal he earned in Charleston) began to run short; but he had such an intense longing to see the great West that he procured a stereopticon and began to give lectures on scientific subjects. My talk with him brought vividly to mind the time when the writer was traveling about and seeing the world, and paying his way by giving lectures, or, rather, familiar talks, on chemistry and electricity. With the stereopticon and the lectures he made his way to Denver, Col., and while there he became interested in galena-mining. He became a student at the State School of Mines. In the pursuit of these studies he was employed by the railroad company to visit various mines, and the State afterward paid his expenses while he went about giving lectures on chemistry, especially that part of chemistry that properly belongs to geology and agriculture. These studies seem to have turned his attention again to the head of our nation, for we find him back in Washington, D. C., in a book-shop and printing-office. While there he became acquainted with many well-known public officials. Most of you will remember Nellie L. Rossiter's little book on the care of silkworms. Mr. Morrison thinks more than $20,000 was wasted by the government in trying to develop the silk industry. My opinion is, however, that, if they never waste money in a worse way than that, they will do pretty well.

While at Washington he became intimately acquainted with Senator Teller, Secretary Rusk, Senator Plumb, and others. As he still held on to his interest in bee culture, at an opportune time, as it seemed to him, he was permitted to urge that an appropriation of $5000 be made for the benefit of bee culture in the United States, and he was successful in securing this appropriation. Prof. Cook took hold of it about a year after the money was given, and I do not know but friend Cook had the credit of it, although Mr. Morrison, if I am correct, was the first mover in the matter, and the one who finally secured the enactment.*

When in Washington he became acquainted with the embassador from Venezuela, Nicolas Bolet Peraza, and finally succeeded in securing an appointment as apiarist to the United States of Venezuela. He accordingly left the United States and spent one year in Venezuela in trying to introduce improved bee culture in that part of South America. The disturbed state of affairs in Venezuela at that time, however, prevented his getting his pay for his services, and that caused him to give it up. During this time he investigated very thoroughly the stingless bees of the tropics, and wrote them up better than they had been before. These stingless bees do actually gather honey enough so it is an article of commerce. He said about three to four pounds from a nest was, however, about as much as he had ever secured.

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* Friend Morrison, in reviewing this biographical sketch, adds here the following footnote, and also the others appended to this sketch.—A. I. R.

Besides myself and the secretary, no one knew. Dr. Tinker was the first to know. Secretary Rusk pledged the Senate Committee not to spend money on the study of wild bees, but to put the money to practical purposes. Prof. Riley did not like this. Secretary Rusk also pledged himself in writing that I should be the first appointee.—W. K. M.

From Venezuela Mr. Morrison went all through the West Indies, traveling over Cuba, Jamaica, Hayti, Trinidad, and nobody knows how many other islands. From the West Indies, for some unknown reason he took a sudden fancy to go to California.† Then for the third time he swung back to Charleston, S. C. Then a desire seized him to see the metropolis of the New World, and we find him establishing an apiary on the roof of the building where he was staying in New York; and I believe one of our bee-journals has given an account of the apiary that was kept for over a year on the housetop with tolerable success in the heart of the great city, said apiary consisting of over 50 colonies. Finally he became somewhat disgusted with the Yankees and their ways of doing things.‡ Now, he did not tell me that, but I rather guess it; and, to tell the truth, I myself, although a Yankee to the very backbone, have been, especially in traveling, considerably displeased several times at some of the ways we Yankees have of doing things. I do not mean by this that there are any better people in the world, all things considered; but I do think that the Yankees might learn some things of other nations as well as having other nations learn things of us,§ to our mutual advantage. Friend Morrison finally took his fifty colonies of bees down from the housetops and moved them to Bermuda about three years ago, and has been there ever since. Not a colony was lost, and scarcely a bee was lost, although he made the trip in the middle of the winter. He gave as a reason for prolonging his stay in Bermuda that his health has been better there than ever before at any other place in all his travels. True to his instincts he has succeeded in getting a sort of experiment station established on the island, without so much as "thank you." During his travels he has contributed at different times to the *American Agriculturist*, *Rural New-Yorker*, *News and Courier*, Charleston, and various other journals. He visited England and Ireland before he was 17 years old. His studies have given him a deep insight into entomology, botany, horticulture, biography, and government. He can tell you how public affairs are managed by almost every nation on the face of the earth; and when it comes to botany and horticulture he shows a wonderful familiarity with almost all rare and costly plants found in different parts of the earth. Perhaps the island of Bermuda gives a larger number of specimens than almost any other place; and especially are there more curious plants grouped there in a small area than almost anywhere else.* I fear that friend Morrison, like many another capable man, is lessening his opportunities for good by giving way to that restless disposition of his that prompts him to be so constantly moving about.

OUR HOMES,
BY A. I. ROOT.

I would rather be a doorkeeper in the house of my God than to dwell in the tents of wickedness.—PSALM 84:10.

In my talk thus far in regard to Bermuda I have mentioned only the pleasant features of the trip, and have, at least in some instances, refrained from finding fault or from telling of disagreeable things; and so far as Bermuda is concerned, and the people who live in Bermuda, I shall have nothing to complain of. The principal thing I saw to find fault with was with our own American people on the island and on the boat, especially with the way in which the rich and fashionable — the stylish people, if you choose — behave at vacation time. Somebody may say, "Well, Bro. Root, why not have *your* own vacation after your fashion, and let the millionaires do likewise after their own fashion?" To this I would heartily say, "All right." But, hold on a bit. In taking my vacation after my own fashion, I am sure I did not inconvenience anybody else—at least, I took very great care that I might not do so. Perhaps the trouble is I am not built for fashionable society and wealth. If so, then I thank God again that, in the language of our text, I am not at all at home in the tents of wickedness. I believe there is a reform coming in methods of travel. On the Pullman train running between New York and Chicago I found a Pullman without any smoking-room attached. You might go all through the car, in and out, and not find a scent of tobacco about it. But there was a special car fitted up for the convenience of tobacco-users. If I am correct, the W. C. T. U. has had something to do with banishing smoking entirely from cars made especially for the use of ladies.

On steamers, however, there is almost no escaping the fumes of tobacco. Of course, you might go down into the ladies' cabin; but when one is seasick he wants the open air if he ever does in his life, and he does not want a heated cabin. You suggest the stateroom. Well, when I lay down in my upper berth, with the port-hole (or bullseye) wide open so the wind could blow right in, I was for a time comparatively happy; but every little while some vigorous tobacco-smoker would lean over the rail in front of my cabin, and puff a great lot of smoke so the wind caught it and brought it right through my little window, full into my face. I think no one can imagine the torture of the sickening fumes of tobacco when he is seasick until he has been through it. In vain I sought a place, when I felt a little better, in the open air, where I could be free from tobacco smoke. Somebody would push in ahead of me and send out a great stream of smoke with filth and poison enough in it to sicken a whole crowd of people. You may say these were exceptional persons; but I declare I looked almost in vain to find a man on board our steamer who did not use tobacco. On the first day of the trip I began to feel lonely, and was questioning to myself whether I should be able to pick out a Christian man by his looks and deportment. I found one whom I thought to be such a man. He did not use tobacco, nor smell of tobacco, and had a kindly and benevolent look. After we became acquainted he and I had quite a laugh over it. He had been nearly all his life a book-keeper for the American Bible Society, and he remembered me and our annual contributions to the work.

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†I was in New Orleans when the Italians were lynched.

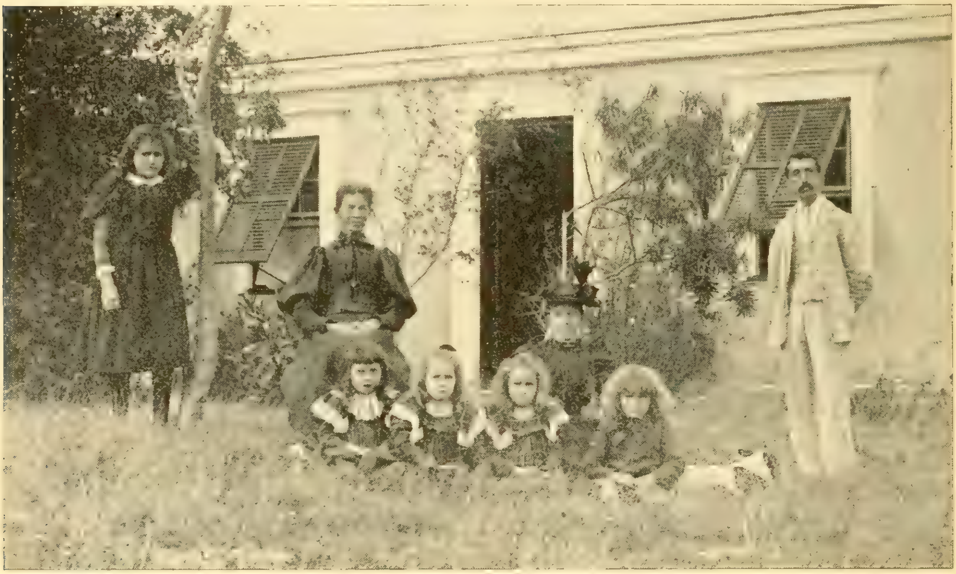
‡Several doctors advised me to leave on account of the malaria in my system, my own desire being to live in the West Indies, especially the island of Grenada — the spice island; but I had to come here where there is no malaria. A cold climate does not agree with me at all; my system is apparently too sensitive. I liked Washington, except its climate.

§All other nations are in the same fix, I am afraid.

*This is a mistake. The West Indies are greatly superior.

After reaching Bermuda I found the occupants of most of these big hotels were of the class who smoke almost constantly, use wine at the table, drink freely from various bottles between times, play cards, sneer at pious people, and—God forbid that I should go any further with my enumeration. I do not feel at home with such people. I can *not* feel at home with them. Very likely they had money enough so they could well afford to pay for every meal they ate as much as (and perhaps more than) an ordinary laboring man gets for a day's wages. Perhaps they can afford to dress every day in a suit of clothes costing more money than many earn in a whole year. I will try to think that that is their affair and not mine; but I pray that my lot may always be cast with the meek and lowly—that is, with those who love righteousness and hate iniquity. Now, please do not understand me, dear friends, by thinking that I condemn every one who handles great wealth. God forbid. We have millionaires who are temperate and pure in heart, who are hungering and thirsting after righteousness, and who are humble and moderate in their ways of living, as well as many poor people.

With this preface you need not think it strange that I passed by all of the large hotels, and, in fact, the large boarding-houses; and it gives me pleasure just now to give you a little glimpse of my home in Bermuda, and some of my little and big friends.



MY BERMUDA HOME, AND SOME OF MY ACQUAINTANCES THERE.

On the right of the picture is friend Morrison, of whom I have told you a good deal. His light summer clothing is just the same that he wore in the middle of February, when he and I had such times wheeling it over the island. The dog with its head near his foot is the one that ran out on top of the fence, and barks when people come along. The curly-headed little chap with his arm resting on the dog is one of the triplets. The two little girls look so much alike that I wonder how their own mother knows one from the other; and the three all together are about as bright and pretty children as you ever saw. The fourth child is an exceedingly lovable little puss. In fact, they have nick-named her "Puss," and she is one of the sweetest little darlings I ever met in any part of the world. The lady right behind her, sitting in the chair, is Miss Corning. The girl at the left is my little Portuguese friend of whom I told you in a former paper. The lady back of the triplets, if I am not mistaken, is their mother, Mrs. Baker. They have a beautiful home near by. The broken tree right by the door is an oleander. I have told you before that oleanders grow wild all over the island, and make thickets of tall trees in many places. You will notice the window-blinds are hung at the top and swing out at the bottom. This is to admit air, and at the same time keep out the sun. I think it is an excellent fashion, and I do not see why we can not have them thus in our country. The window back of Miss Corning opens into the room I occupied; and as I look at it I can recall every bit of the furniture, and think of the refreshing naps I used to have there every forenoon just before dinnertime. The window right back of friend Morrison opens into the pretty room where we had our Sunday-school every Sunday afternoon. All of the people you see were gathered there, and perhaps nearly a dozen others. Miss Corning has quite a pretty little organ; and after the Sunday-school she played while friend Morrison and others sang beautiful hymns, sometimes taking the book and singing snatches here and there almost all the way through. Dear friends, you can not imagine what a great and refreshing contrast this way of spending the Sabbath is from the Sabbath of fashionable life, with its tobacco smoke, drink, cards, and, too often, the accompanying sneers at temperance, purity, and every thing that we regard as pure and holy. Give me the humble cottage, the pure and holy lives, with the Bible and the hymn-books and God's sacred altar kept sacred, not only Sundays, but on every day in the week.

As I write these words a struggle is going on in our nation in regard to the matter of stimulants and intoxicants in our army and navy during this war time. I am told that intoxicating liquors of every kind have been rigidly excluded from every American battleship. The commanders have decided that, if we are to excel in the use of modern artillery, the men must be entirely free from the use of stimulants. May God be praised if this thing is indeed true. But our soldiers on land are certainly a great way off from this as yet. A new plan of getting the soldiers to drink beer, that has recently been inaugurated, is called the “canteen station;” and we are told that breweries are running day and night, producing carloads of beer to supply the demand among the soldiers, and that the discipline is so loose or ricketty that boys from Christian homes, who never tasted beer before, and never thought of tasting it, are fast learning the habit under the protection (and some say *encouragement*) of the United States army. It it be true that men can not fight on board a ship with intoxicants crazing their brains, why does not the same thing hold true on land as well? One of the newspapers suggests that the reason why the Spanish fleet at Santiago did little or nothing in its own defense was because the officers of the ships had given all of their own wine to the sailors to make them fight better before going into action.

At our prayer-meeting last Saturday afternoon the statement was made that the entire railroad system of the United States had decided not only to refuse to employ a man who is intemperate, but that the different companies had agreed to go so far as to dismiss every employee found patronizing saloons. If this is true, we may say again, “May God be praised!” Now, it seems to me that it would be going but a step further for the roads to declare that they will no longer carry beer, especially if they are satisfied that they can not afford to keep a man in their employ who uses it.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

GROWING WHEAT ON “HIGH PRESSURE.”

My high-pressure gardening for the present season has taken a little different turn. Perhaps I have not told our readers before, but we have not been running our wagon around town with honey, fruit, vegetables, etc., since last Christmas. There were several reasons why it was discontinued after having been kept going regularly, winter and summer, for almost a dozen years. In the first place, I felt the need of less care and responsibility; and to grow garden-stuff, especially on high pressure, requires careful planning and oversight, both early and late. Another thing, I have so completely filled the field for the past ten years or more that other people who raise garden-stuff complain that I have so well supplied the town that there is no market for any thing Let me remark right here, however, that, even though I gave notice far and wide that I was not going to supply the town with vegetables any more, nobody else has occupied the field to any extent. It is true, there are people who go about town with surplus *occasionally*, but no one makes regular trips all over town every other day, as we used to do. I love the business, and I think it not only a very pleasant but fascinating way of making a living, to grow garden-stuff, fruits, and berries, and hand them over fresh to the consumers. By the way, I do not know but I have educated our Medina people up to a pretty high notch in some respects. For instance, we often hear the remark, “I want so and so, providing it came right from the garden to-day. I do not want any thing that was gathered yesterday.” Now, some people advocate selling your stuff to the grocers, and letting them do the retailing; but let me ask such to tell me how often they can get stuff that wasn't “gathered yesterday,” to say nothing about the day before, or *several* days ago. I heartily believe in having the producer meet the consumer. Learn by practice how much stuff you will probably sell of each variety every day, and manage so as to get home with an empty wagon, or nearly so; then start out next morning with every thing fresh, right from the garden.

Well, after deciding not to run the garden any more, but to grow stuff only for our lunch-room, or dining-table rather (for the dinner-table in the factory has not yet been given up), we found a good many acres of ground underdrained and heavily manured that was not going to be occupied. Mrs. Root suggested that I should raise hay. A clover-field looks very pretty, and it is not very much work, except at haying time. In our market-gardening we have cultivated something like twelve or fifteen acres. We have this year, perhaps, five or six acres of potatoes, for I am still a potato-man. What shall be done with the rest of the six or eight acres? In order to get it into clover I decided to grow wheat *a la* Terry. We accordingly prepared and fitted all our vacant ground, after potatoes were dug last season, for wheat, of which I proceeded to grow my first crop. I was pretty sure I could grow wheat, although I knew the consequence of putting wheat on ground so heavily manured for years past. Several good farmers suggested that, if I would use the right kind of phosphate, it would strengthen the straw and make it stand up. But, was not my wheat handsome all last fall, all winter, and all this past spring? Men who had farmed all their lives would frequently say, "Why, I never before saw such a pretty piece of wheat in my life — it is so rank and luxuriant! There are no thin spots anywhere." Well, I never believed in "thin spots" in raising a crop of any kind. If there was a piece of poor ground, there is where I massed my artillery to make it come up to or make it go ahead of the rest.

Well, the wheat began to head out; and just about the time it was heading out, the market price was "heading" somewhere toward $2.00 a bushel. Of course, there were many shakes of the head from veteran tillers of the soil. They said it would fall down in spite of me. I used to remark, "If my wheat and the price both keep up, it will be about the best market-gardening I ever did." My wheat stood up pretty well until the great long heads began to get heavy with grain. They then bent over and hung down gracefully; and the dry spell we were having seemed rather to favor my wheat enterprise; but whenever we had a rain, and the heads got wet, a good many of them would go down. But you know I am always hopeful, and the wheat seemed to catch my spirit, for it would bend down gracefully, and then get up again; but as the heads became heavier, and as we had a thunder-storm or two with considerable of a blow, the heavy grain pulled it down and held down a great part of it.

Everybody inquired how I was going to harvest it, and I inquired rather anxiously myself. I finally heard of a certain man who had a low-down Deering Pony binder, and he said he had never seen a piece of wheat yet that he could not cut. He was hopeful, like myself; but when it took him, with an assistant, two days and a half to harvest less than ten acres, he rather admitted, or submitted, that it was the worst wheat to cut he had ever come across. But, was there not a pile of straw and grain to be shocked up? Why, the shocks make one think of a little village where the houses are so close together the neighbors can shake hands out of the windows all round. I do not know how many bushels we are going to get to the acre. I will let you know after thrashing. We managed to get it shocked up a little before it was dry enough to shell out, and we have not been bothered by any storms. But I tell you there was lots of hard work about it. We tried cutting about an acre that was down the worst, by hand; but I found it was going to cost me about $3.00 an acre to do the cutting and binding. The man with the Pony binder says he cuts wheat for 50 cents an acre if a team is furnished; but with the amount of grain on our land, the twine, which must be purchased if we use the machine, costs another 50 cents. Then there were so many places where the crop was so heavy that the binder could not handle it all, it cost fully $1.50 to harvest it and set it up, even with the machine.

Unfortunately, the Pony binder was not in the best kind of repair—that is, the revolving aprons were not; and we had to stop the first day and telephone for a new apron. They did not send the right one, so we were obliged to patch up the old one. Now, our experience in this line illustrates a point in business that I have tried to make plain a good many times. The owner of the machine should have measured his apron, and described it so there could be no mistake; then he should have gone to the telephone and either made his order or listened while it was being made.

You may say, "Why, can't you trust a regular business man to do business?" My experience has been a thousand times to the effect that you can *not* trust an ordinary business man to do business unless you watch him and see he does it right. This may be a little hard on some of our friends, but it is too often true. If you are in a critical position, and much depends upon there being no sort of mistake or misunderstanding, keep your eye and ear on every detail of the business, from beginning to end. Let me give another bit of experience in that wheatfield.

When the owner decided he would have to mend the old blanket, and go ahead the best he could, I felt pretty sure I had better watch him all the way through, although I was needed very much in another direction. There were two men, two boys, and three horses that would soon be at a standstill. He thought it would take twenty minutes. I said it would take an hour. It took an hour and ten minutes; and if I had not given it my personal supervision I do not know how much longer it might have taken. The owner of the machine went up to the factory and got the material he needed. He wanted to fasten the heavy canvas to some strips of wood. As soon as I saw him driving the small-headed wire nails through the canvas I told him the heads would pull out quicker than he could drive them in. I suggested that some strips of leather be laid down first before driving the nails. He agreed that *that* would be an excellent idea. When I told him he needed some large-headed tacks he said he did go up to the factory, and we hadn't any on the premises. This was down in the field. I jumped on the wheel, and was soon in the counter store, asking for large-headed carpet-tacks.

"Haven't any."

We are closing out our department store a good deal as we are closing out the garden business. Then I went up to one of our rooms, and asked for tacks. They, too, declared they had nothing but some very small tinned tacks. But I was getting in earnest by that time. Said I, "But you certainly have something in this establishment to fasten canvas or like material to wood better than these slender small-headed wire nails."

"Oh, yes! we have some double-pointed tacks."

Then he showed me a kegful right under his hand. I grabbed a handful, and was down in the field by the side of the binder man, "in a jiffy." I tumbled them on to the canvas where he had been putting in his little nails.

"Well, I declare! Now you have hit it to a dot."

Then he proceeded to put the double-pointed tacks, or staples, along the leather strip right over where he had been putting the wire nails. After he got through he admitted that *they* would stand the strain of that tremendous crop of wheat tumbled about toward all points of the compass; and after we had got the apron in place I called his attention to the fact that the double-pointed tacks I brought him were exactly the thing the manufacturers used when they made the apron in the first place. With their help we finished the wheat harvest in pretty fair shape, but it took us nearly all the forenoon of the Fourth of July. The machine was engaged, so there was no other day in which he could complete the work for me. Now let me point a moral right here:

While people oftentimes talk too much (that is, certain people do; but, mind you, I am not now thinking of *women* at all — at least I am *trying* not to think of them), there is a good deal of sorrow and trouble in this world because people do not talk *enough*. My good friend did not talk enough or emphatically enough when he ordered the new apron. Then when he went after the tacks, and they told him they had none, he did not explain to them that he wanted them to hold heavy canvas very securely to strips of wood. And, by the way, when you go to a hardware store for something, it is an excellent plan to explain to the clerk or proprietor just what you want to *do*. If he knows what you have in mind he can often fit you out with something that will do just what you want done, very much better than you dreamed of doing it. There are great improvements along all the lines of hardware; and lots of people do not even know of the handy short cuts that are to be had for an almost insignificant amount of money. Study up thoroughly the work of the day. Look out for breaks that are likely to occur, and have things on hand, as far as possible, to anticipate emergencies. It is a rather expensive piece of business, I assure you, to have a machine break down in harvest time, when a lot of expensive men have to sit down in the shade and await repairs.

I noticed in the *Ohio Farmer* that W. I. Chamberlain has had some trouble from wheat falling down. He suggests using chemical fertilizers instead of stable manure to obviate this very thing. But I tell you I am somewhat in doubt as to whether chemicals will give the crop of luxuriant grain that comes from stable manure and thorough underdraining. By the way, I had a piece of ground on the creek bottom where chickweed got in. It probably came in with the manure. I tried growing potatoes with clean culture to get out the chickweed; but the chickweed would grow so fast I began to get a little alarmed. This heavy crop of wheat, however, so completely snowed under the chickweed that at present writing there is not a spear of it in sight. It may come later but I am determined to get rid of it, even if I have to work as hard as I did with the Canada thistles. The man who drives the team, and who put in the wheat, suggests that I grow wheat again on the same ground, without any more fertilizer. By the way, it is rare fun to harvest wheat with modern machinery when it stands up straight. We had perhaps an acre that was put in after *late* potatoes. This stood up perfectly. I think the machine would easily cut an acre an hour, with three horses. Every bundle was neatly bound, and there was scarcely a head of wheat wasted; but where it was tumbled down so, and we had such a mess of it, the ground was literally covered with plump heads of grain, and much of it is down between the stubble, so I presume it can never be saved.

ELECTRICAL TRANSMISSION.

A Peep into the Philosophy of Dynamos and Electric Motors.

BY A. I. ROOT.

In mechanics there are two principal methods of transmitting power; namely, by belting and by gearing. Belting is in more common use because there is less friction and less rattling and clanking. But belts almost always slip, more or less, and in slipping there is always a loss of power. Gearing never slips unless it is so exceedingly defective and out of shape that one cog slips by another; hence the expression, "slipping a cog." Gearing is always used for clock and watch work, because in measuring time we must have positive and absolute transmission. The chain-and-sprocket wheels, such as are used in bicycles, are a sort of compromise between belts and gear wheels. Their transmission is positive, and of late the chain and sprocket are used considerably in slow-working machinery. For rapid work — buzz-saws and the like — the chain is not in much favor. If it should break it would be more likely to kill people than the belt, and, if I am correct, the friction would be rather more, without expensive lubrication. Boys and girls who run bicycles know how often their chains need lubricating in this way.

Now, within a short time a new method of transmitting power, called "electrical transmission," has come to the front. Without doubt you have all seen dynamos. They are generally run by a steam-engine. Well, a dynamo may be in one building, and the machine propelled may be quite a distance away; but the power may be conveyed by just two little copper wires. As an experiment, our whole machine-shop was run with full power recently by two little wires no thicker than a common brass pin; and while I write, a little bit of motor, not much larger than a good-sized watermelon, is working a pump down on the creek bottom, 600 feet distant, that supplies soft water for our whole establishment—in fact, for the whole neighborhood. Now comes in the wonderful fact that caused me to talk with you about electric transmission.

When these little wires carry the power, do they carry it like a belt so that some of it may be lost by slipping, or are they absolute and positive, like cogwheels or the chain-and-sprocket wheels? Electricity is such an erratic, slippery agent, we might suppose it would "slip a cog," or a great many of them, without knowing the difference. Perhaps I should beg pardon of electricity for speaking thus lightly of its wonderful powers. Well, strange to tell, transmission by the electric fluid is positive, like gearing. When we installed our 35-horse-power dynamo, took down our belting and shafting, and ran two little wires up to the pressroom to the motor, I watched the thing with much curiosity, and was greatly surprised when the press and all the other machinery ran just as steadily, or perhaps more so, if any thing, than when the great cumbersome belting and shafting carried the power from the engine. I said to the boys, "Why should that motor go just so fast and no faster? Why doesn't it go slower when you attach heavy machinery, and especially machinery that has to get over points of great special resistance at every revolution, as is the case with our big press?"

The boys explained to me that the electric motor had got to go just so fast and no faster; that is, if our engine is made to move at a certain speed by means of a governor, the motor, or, if you choose, all the different motors, take up a particular rate, and each one is made to run so fast and stick right to it. The electric current neither jumps ahead nor lags behind. It is right there, steady and true, hour after hour, day and night.

"But," said I, "suppose we hold that motor back by some tremendous resistance — what then?"

The boys answered, "Why, it would spoil the machine if you were to hold it still. Look here. Here is an apparatus called a *rheostat* that cuts off the current and stops the machine before any thing can break. It is a sort of safety-valve or safety-apparatus to prevent damage by awkward manipulation."

Now, this whole matter filled me with wonder and surprise; and it fills me with wonder and surprise even yet. But this is not all of it. Said I:

"Does this motor here in the press-room run at exactly the same speed as the dynamo in the engine-room?"

"Oh! no, father. This little motor up here runs very much faster than the dynamo or generator down by the engine."

"But what makes it go faster? How in the world does the thing know how fast it ought to go, and why does it stick right there without going at any other speed?"

In studying into this curious matter of electric transmission, I overhauled not only Ernest, my 36-year-old boy, but Huber too, our 14-year-old electrician. They both explained to me that the speed of the motor depended on the size of the wire composing it, and on the way the wires are wound. The motor is made to go at such a speed when the generator that furnishes the power is run at a designated and particular speed. This aroused my curiosity again.

"Why, look here, boys, can you multiply speed by these different motors in the way they are wound? Can you make a motor that, when put on the shaft of a buzz-saw, will give the saw sufficient speed to do its work while the generator runs at about the same speed as the flywheel of the engine?"

The boys answered, "Yes, it can be done, and has been done to some extent; but it costs a great deal more to make generators that run very slowly, and it also costs a great deal more to make motors that run very fast, like a buzz-saw. At the present stage of mechanical and electrical science it is cheaper to multiply speed to a certain extent by means of belting and pulleys. For this reason you generally see the generator in a large plant running a good deal faster than the engine that propels it."

Now, alongside of these facts comes another curious thing. When you move a machine that requires many horse-power to turn it, the belt must be very wide, very long, and it must pull with a great deal of force on the machine in order to make it "hug" the pulley. For this reason machinery has to be set on foundation that is very expensive or else it will pull loose. The power pulls on one side. You can readily see this in a thrashing-machine; but a machine may be propelled by electricity—that is, where the motor is placed right on the main driving-shaft, and the machine need be anchored scarcely at all. It can rest on the floor of the room; and as only these little wires are attached to it it can be moved to any spot or angle you choose; for the electric force pushes right round the shaft on all sides alike.

I discovered yesterday, in riding my chainless bicycle up some long high hills, that I could climb them very much easier when I pushed and pulled on the cranks with my toes. Yes, you *can* push and pull with your toes when you learn the trick. Stick your toe upward when the crank is at its highest point, and crowd it from you. At the same time, stick your other toe downward and push back with it. Push forward with the upper foot, and pull back with the other foot. If you learn the trick you can climb hills without puffing or blowing very much. Now, in place of two cranks suppose we had a dozen, and somebody had hold of each one of the dozen, pulling, not straight ahead, nor up nor down, but right around in that circle all the time. This pulling would not jerk the machine backward nor forward nor up nor down. Well, electric transmission turns the press or other machines in the same way.

Are you curious to know why one motor should go faster and another slower when both are attached to the same wire or set of wires? Well, it depends up the size of the wire that is used in winding the coils, and also on the way they are wound. Forty years ago I made an electric motor. I studied it up from what little I could then learn of electricity. My motor was made so as to both push and pull. I first made a very powerful U magnet, or I made a magnet and got a traveling lecturer to charge it for me. Between the bars of this big U magnet a small straight magnet was made to revolve. This straight magnet was charged by a little battery, by means of a coil of copper wire surrounding it. If I sent the current through in one direction, each end of this bar would pull to get close to the poles of the larger magnet; but just as soon as it got up close to the larger magnet a piece of mechanism reversed the current; then both ends of the little magnet were pushing to get away. After it had made half a circle the current was reversed again, so the thing pushed and pulled alternately, and it made the little shaft hum at such a rate of speed that the young inventor was more astonished than any one else. In fact, after I succeeded in making the machine work to my satisfaction I started out, before I was 18 years old, giving talks to the schools, on electricity and chemistry. So you see it is not very strange that Ernest and Huber take to this new science as ducks do to water; and it is not very strange, either, that they were able to instruct me in the mysteries that have lately been developed in this new science.

Now, before closing I wish to touch upon another point. These things are very wonderful, as you see. Not only are the brightest and busiest brains in the world at work on all these problems, but they have been long years at them. Almost every day chronicles some new and wonderful fact that has just been worked out. I would honor and reverence Edison, Tesla, and all the other true and faithful workers. Others are looking on. The world is getting a glimpse, more or less, of these wonderful achievements. Yes, and even thieves and swindlers are looking on. The venders of Electropoise and Oxydonor try to make people, who are too busy to notice the difference, believe that they are *also* honest toilers in developing God's hidden treasures. They bring out something that has on the outside a resemblance to an electrical apparatus, and laugh in their sleeves at the credulity of mankind in paying them more money for the humbug toy than an honest machine ought to cost. Even at the World's Fair these fellows pushed in their claims, and actually had their traps set up alongside of *bona-fide* scientific apparatus in the buildings devoted to electricity. I presume every honest toiler in true mechanical science blushed for shame when he saw these things, and well he might. Yes, it should make the very blood in one's veins boil with indignation to see the way in which sham was permitted to push its way, and to stand side by side with real science. Well, we are becoming better and better educated every day. Even most of our schoolchildren are too well posted to believe that a single wire can carry something that will cure *all kinds of diseases*, and also know that no man living can sit down and write out what the weather will be (so as to put it in his almanac) for a whole year ahead. Great is truth, and will prevail.

AN ELECTRIC BICYCLE-LAMP RUN BY A DYNAMO CARRIED ON THE WHEEL.

Since the above was written, a beautiful little apparatus has been placed in my hands for producing an electric light on a wheel. A little dynamo weighing about two pounds is propelled by resting on the rubber tire; and whenever the wheel is in motion it furnishes a beautiful bright light. The dynamo is a model of simplicity and power in small compass, and of small weight. Like my little model of more than forty years ago it is one of the "push-and-pull" kind. It consists of seven powerful U magnets, and a coil of fine wire revolves between the poles of these magnets. Just think of it — no oil, no fire, no need of matches, and no cost to speak of, for the little lamp will burn 400 hours, or more than a year, even if you use it every night! The extra power used is so little as to be scarcely perceptible. In fact, I can not see that my wheel runs any harder with it than without it. The trifling disadvantages are, that there is no light except when you are in motion; and if you slack up on account of the roads, the light slacks up correspondingly, although there is sufficient, with a very moderate speed, to get along very well. The apparatus is made by the Farnham Electric Co., 59 Clark St., Chicago. Price $5.00. The whole thing is exceedingly interesting to me because it comes very near solving the problem of lighting our homes by wind power. A very small windmill would furnish sufficient power to give a powerful light. The only trouble is the irregular power furnished by the wind, and at times no power at all. A storage battery will have to be called in to store up the electricity, and let it out (when you "press the button") at an even regular rate. I expect to make some experiments in this line soon, and will report progress.

Perhaps I should add that there are two lamps of different power furnished for the wheel—one for those who ride at a moderate speed, and another for the scorchers. If you run too fast with the former you will be in danger of burning it out. If you do not go fast enough for the latter you would not get much light. But the lamps can be changed, one for the other, in less than a minute.

HEALTH NOTES
BY
A. I. ROOT

PATENT MEDICINES.

I have been, as you may know, sending for and testing different patent medicines advertised in the papers, to be sent free of charge. One preparation, very extensively advertised, seemed for a time to produce some effect — at least to the extent of giving relief for the special symptoms it was recommended for. After *further* trial, however, I could not discover that it made any difference whatever, only that, by taking a full dose, it acted as a physic. This, of course, gave relief to some extent. I requested our Ohio Food Commissioner to make an analysis of the medicine, and he did so. It contained about 12 per cent alcohol, and the predominant chemical agent was epsom salts In taking the medicine I noticed a familiar taste, but did not succeed in guessing what it was until he mentioned epsom salts. Then the question arose, "Was it the alcohol and the epsom salts that gave temporary relief, or was it the particular root that gave the medicine its name?" I wrote to the Commissioner, and below is his reply :

Mr. A. I. Root:—I have been endeavoring to gather some information for you in reply to your letter of May 17th. I find, however, that the subject is so broad, and my time so limited, I have not made much progress. I would say, however, that, as a rule, the patent-medicine people have a common practice of giving a fanciful name to a very common preparation, and advertising it as a wonderful discovery. I doubt if "—— ——" signifies any thing further than to mistify, interest, and gull people who imagine there is something wrong with them. I do not know that there is any "—— ——" at all in this preparation; but it is a general term, and there are a thousand different roots that might be called "—— root."

The impression is growing on me that a large per cent of patent medicines are fakes, pure and simple. Whether the one to which you refer is a fake or not, I am unable to say at this time.

JOSEPH E. BLACKBURN,
Dairy and Food Commissioner.
Columbus, Ohio, June 14.

I have thought best to suppress the name of the root, because in this case the Commissioner is giving only his opinion ; and my impression, after giving the subject a study for many years, and making careful tests as well as I was able, of prominent medicines, is that our Food Commissioner is sound and orthodox in what he gives us in his brief statement above.

The amount of alcohol taken just before meals three times a day might prove to be a temporary stimulant to digestion ; and the epsom salts would, no doubt, in many cases, give relief in a great number of troubles with the digestive apparatus. Then some harmless root tincture might be added simply as a blind, and the whole would give us a fair sample of the patent medicines that are sold for one or two dollars a bottle. A free sample to give away would induce many people to make a purchase, especially if a little "imagination" were thrown in. My impression is that this is a fair sample of the medicine business, and that the much-lauded roots and shrubs have little or no effect one way or the other.

A NOVEL SUGGESTION IN REGARD TO KEEPING IN GOOD HEALTH.

The editor of the *Progressive Bee keeper* suggests that one way of preventing sickness is to keep out of debt. He gets his authority for taking this ground from the fact that so many people get sick just after persuading you to trust them—or, at any rate, they write that the reason they can not pay according to agreement is that they have been sick; and this debt that hangs over the head of the family seems to affect the wife and children. One poor man urges, as an excuse for not paying, that they have all been sick for two months—even to the mother-in-law; therefore the *Progressive* advises keeping out of debt if you want to enjoy good health. Now, there is a moral to this little story. The class of people who repeat the story so often about sickness in the family whenever they are urged to make good their promises should remember the thing is getting to be a little threadbare—at least some of the bee-journals think so. Now, may God forbid that I should cast insinuations on those who are doing their best to be prompt. We are all liable to be sick; but in all business ventures I think it behooves us to remember we are none of us *sure* of being well.

KIND WORDS FROM OUR CUSTOMERS.

Supplies came to hand, and are satisfactory. Sections are the finest I ever saw; everything shows progress. R. STEHLE.
Marietta, O., June 14.

I received my foundation from the express office today, and am filling frames as fast as I can. It is the finest lot of foundation I ever used. J. D. GIVENS.
Lisbon, Texas, April 18.

MAKING THINGS GROW BY GIVING THEM "LOVING CARE."

One week ago to-day I planted ten of the tomato seeds you sent me, in ground fixed as fine as could be done ; put a stick by each seed to mark the place, and watered the ground lightly with a whisk-broom. Next morning I put a piece of canvas, four double, over them ; every evening I took it off, and dampened the soil a little. To-day every seed is up—not a weak one among them. I gave two seeds to a kind neighbor, and, to his delight, both of his are up. I have shaded, watered, and watched my "Darling," and it has begun to grow. I can't tell you the pleasure they give me. MRS. EMMA SLAUGHTER.
Mayfield, Ky., June 7.

A little spring had lost its way amid the grass and fern;
A passing stranger scooped a well, where weary men might turn ;
He walled it in and hung with care a ladle at the brink ;
He thought not of the deed he did, but judged that toil might drink.
He passed again, and, lo ! the well by summers never dried
Had cooled ten thousand parching throats, and saved a life besides.—*Farm Journal.*

CONVENTION NOTICE.

The annual meeting of the Northern Illinois Bee-keepers' Association will be held at the court-house in Freeport, Ill., on Tuesday and Wednesday, August 16 and 17, 1898. All interested in bees are invited to attend. B. KENNEDY, Sec.,
New Milford, Ill.

Columbia Bevel Gear Chainless Bicycles. **$125.**

Columbia Chain Wheels,	**$75.**
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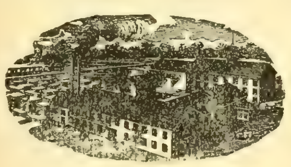

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We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

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Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Untested, 75c; 3 or more, 65c each. Send for 40-page catalog, information to beginners, etc., free.

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JNO. NEBEL & SON, HIGH HILL, MO.

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WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.

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Untested Queens.

50 cts. each, $5.50 per doz. Young tested, 75 cts. each, $8.00 per doz. Fine yellow queens, from the best of honey-gathering stock. Orders filled by return mail, and every queen guaranteed.

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Ready! Stacks of queens reared under most favorable conditions from either three-band or golden strains, *warranted* at 60c each; 6 or more, 50c. Free circular. Am member N. Q. Breeders' Union.

J. B. CASE, Port Orange, Fla.

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SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

SPECIAL NOTICES BY BUSINESS MANAGER

BEESWAX.

Although we have a very large stock of wax on hand, we will pay, for the present, 25 cts. cash, 27 in trade, for average wax delivered here. The general market at present may be a little above this figure, but it will very soon be down to this, or below.

A FEW STATISTICS.

In the year beginning July 1, 1897, and ending June 30, 1898, we have made about sixteen million sections of all kinds and sizes, besides buying about four million from other manufacturers and turning away orders for many more. Our output of Weed process foundation in the same time was fifty five tons, while Chas. Dadant & Son made thirty-three tons, or eighty-eight tons in all, or 176,000 lbs. of Weed process foundation sold in the U. S. within the twelve months. Several tons of what we made was exported.

Since we have been making fences we have turned out half a million of the various styles.

ADVANCING PRICES.

There have been, within the past month, or two or three months, considerable advances in the price of several commodities entering into the construction of bee-keepers' supplies. There has been a large advance in window glass, which affects strips for shipping-cases and glass for sections. Sheet zinc has advanced over a cent a pound; and lumber of various grades which we use is from 50 cts. to $3.00 per thousand feet higher than we paid a year ago. These advances will necessitate the readjusting of prices of many goods, and the new prices will be somewhat higher than they have been.

HONEY PROSPECTS.

In our last issue we made a request for offers of comb and extracted honey, and we have not heard so far from half a dozen people. We have a number of orders for new honey waiting for a supply to fill them, but so far we have got track of none ready for market. We have received plenty of discouraging reports as to the honey crop being a disappointment or an entire failure. In many places where some white honey was gathered, honey-dew was also gathered with it, thereby spoiling its value for market. With a failure entirely in Southern California, where, in an average season, several hundred carloads are produced, and with a very meager crop in many other parts of the country so far as we have learned there ought to be a good demand for honey at better prices than have prevailed in many places during the past two or three years. We should like very much, for our own information in making plans and preparations for next season, to hear from our readers generally as to the prospect for honey in their locality as compared with previous years, both as to quantity and quality, comb and extracted.

ORDERS FILLED PROMPTLY.

As we go to press we can say that all orders are filled with the exception of a few No. 2 grade of sections and a few shipping-cases, besides a large carload of export orders that do not have to go till next week to reach the vessel on which they sail. We have been able for the past two months to supply but a part of the No. 2 grade of sections that have been called for. We make this grade only as they accumulate in making No. 1; and as our lumber has been of unusually good quality it has not run to more than 10 to 15 per cent of No. 2 grade, while the orders have called for about 30 per cent of No. 2; consequently it has been impossible to supply the desired quantity of No. 2 grade. We have shipped during the past ten days to two weeks, over fifteen thousand shipping-cases. These have gone mostly to Colorado, Michigan, and Minnesota; and these are the States where the most encouraging reports of honey-yields so far received have come from.

We have kept our day and night forces going up to the fifteenth; but from now on we shall be able to get along with the daylight run. We expect to make up stock from now on, as well as work on box orders, of which we have orders booked already for about five carloads. We are in shape now to ship goods of any kind by first train. If in need of any thing, let us hear from you.

Special Notices by A. I. Root.

I expect to leave Cinnabar, Mont., on my wheel-trip through Yellowstone Park on Wednesday, Aug. 3.

ONION-SETS FOR FALL PLANTING.

We are just now gathering a splendid lot of American Pearl, White Victoria, Prizetaker, White Multiplier, and Whittaker. For particulars about fall sowing, see leaflet, free on application. Prices of new onion-sets, quart, 20 cts.; peck, $1.00; bushel, $3.50. Large-sized sets, half above prices. If wanted by mail, add 10 cts. per quart extra.

PRIZETAKER ONION-SETS.

We did not sell all our second-size onion-sets last spring, and some are left over To my great astonishment they are still hard and firm, no sprouting; they are just good, solid, ripe, small-sized onions. Of course, the dry weather may have had something to do with it, but it looks now as if they would keep over till another season In this one respect Prizetaker onion-sets are ahead of any thing else I ever saw or heard of; and so far they seem to answer well for growing large onions the second year.

GROWING LATE CAULIFLOWER.

The cauliflower is emphatically a cold-weather plant. Some of the finest heads we ever saw were grown in the open air late in November. They will stand more frost than cabbage, and almost as much as any other vegetable. For growing this late crop the plants should be put out in July. We have succeeded so many seasons in that way that we are now supplied with a nice lot of plants. Prices: 10 cts. for 10; 75 cts. per 100 If wanted by mail, add 5 cts. for 10 or 25 cts. per 100 for postage. Plants right from the seed-bed, that have not been transplanted, will be half the above prices.

TURNIP SEED.

The old adage,

The 25th of July, be the weather wet or dry,

is about the time for sowing turnips. If you want them only for table use, however, you had better sow them a little later so they will not become too large. And, by the way, turnips for the table should have successive sowings, for they are never really nice where they are too large or too old. About the size of a good-sized apple is just right; and for the table you might sow a little seed once a week, say for five or six weeks The last sowing will produce them large enough for table use generally, before there is freezing weather enough to hurt them. We can furnish seed promptly of Yellow Aberdeen, White Egg, and Purple-top White-Globe, at the following low prices: Ounce, 5 cts.; pound, 25 cts.; 5 lbs., $1.00. The last named seems to be the popular all-round fall turnip. But to be nice they ought to be grown quickly, which can not be done during a severe drouth. If dry weather spoils them sow again just after a rain.

C. F. MUTH & SON.

We are sorry to say that complaints are still coming in to the effect that this firm does not settle for honey sent it, nor answer letters. We have written repeatedly, but have had no reply since the death of Mr. C. F. Muth, with the exception of one postal card reading as follows:

Gentlemen:—Your different favors of recent date were received in due time. Since my father's death it has kept us very busy day and night; but we are now catching up, and will write you fully, and explain every thing in a few days. Hoping this is satisfactory, I am Yours truly,

Cincinnati, June 18. AUG. J. MUTH.

You will notice the above was sent us in time so it might have appeared in our July 1st issue; but as there was a promise of something further in a few days we delayed publicity. As we have received nothing further up to date, July 12, we have thought best to submit the above card to our readers. We would also state that we have had the matter looked up, and have reason to believe there is plenty of property to settle all the claims, and a great deal more. The only trouble is that their affairs are even yet a good deal mixed up.

The Biggest Offer Yet!

Last year only about one per cent—only one subscriber in 100—ordered his Review discontinued. If the Review could secure 1000 new subscribers the present year, there is an almost absolute certainty that at least 900 of them would remain; not only next year, but for several years—as long as they are interested in bees. Once a really *good* bee journal visits a bee-keeper a whole year, it usually becomes a permanent member of his family.

I would have no difficulty whatever in getting twice 1000 new subscribers this year, if all of the bee-keepers in this country had read the Review the past year. I have sometimes thought that it might pay a publisher to give away his journal one year, simply for the sake of getting it into new hands. There are, of course, decided objections to such a course; but I am going to come as near to it as I dare. Here is my offer:

If you are not a subscriber to the Review, send me $1.00, and I will send you twelve back numbers, the Review the rest of this year and all of next year.

Each issue of the Review especially if devoted to the discussion of some special topic, is really a pamphlet containing the best thoughts and experience of the best men upon the topic under discussion Twelve back numbers of the Review are, to a certain extent, so many little books devoted to as many different phases of bee keeping. Some issues of the Review are now out of print; of others only a few are left; while of others there are several hundred. Of course, I shall send those of which I have the most, but no two alike.

Most people subscribe for a journal at the beginning of the year. In this case there is no use of waiting, as you will get the Review for next year just the same as though you waited until next January to subscribe, and you get all the rest of the numbers for this year *free*. The sooner you subscribe, the more free issues will you receive.

Let me tell it over once more. For $1.00 you get twelve back numbers, the Review the rest of this year, and for all of 1899.

W. Z. HUTCHINSON, = = Flint, Mich.

Queens At Especially Low Prices.

By return mail, safe arrival guaranteed. Stock the best. Thirty-five years' experience in breeding the Italian bees warrants me in saying this.

1 Select Tested, for Breeder,	$2.00
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1 Warranted Purely Mated	75
3 " " "	2.00
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Send for 40-page descriptive catalog of Bees, Hives, and a full line of general supplies at prices to suit the times.

All orders accompanied with cash will receive prompt attention. Address

W. W. CARY, Lyonsville P.O.,
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IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00, tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

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ITALIAN QUEENS, 75 cts. Full Colonies and Nuclei.

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Prosperity

It is here, and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

GEO. E. HILTON,
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ITALIAN QUEENS.

Virgin 3-banded, 40c each; 3 for $1.00.

Gardiner L. Ellis, = = Millsboro, Del.

J. ROSEN KRATZ,

Breeder of Belgium Hares, Homing Pigeons, and Dutches Pigeons.

HATFIELD, PENNSYLVANIA.

SPECIAL OFFER. 200 queens reared from Doolittle and imported mothers. For the next 90 days, beginning August 1, untested, 50c; select untested, 60c; tested, $1.00; select tested, $1.25; extra breeders, $2.00 each. Safe arrival guaranteed. Eight years' experience as a qeeen-breeder. "Roots' goods at factory prices."

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1,000,000 Peach Trees

grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

THE STORRS & HARRISON CO.,
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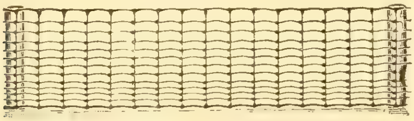

Soldierly Heroism

knows only prompt obedience to superiors. **Having no superior, THE PAGE** must be a "law unto itself,"—a "self regulator."

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

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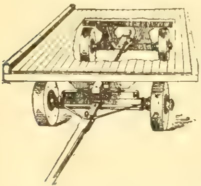

Low-down Broad-tire Farm Trucks

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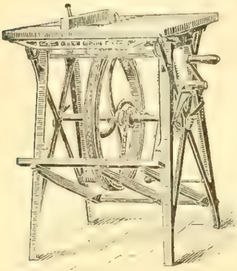

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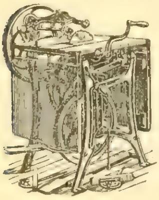

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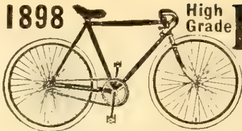

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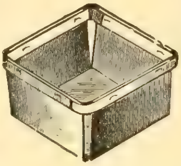

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Honey Column.

CITY MARKETS.

DETROIT.—New honey is coming in, but prices are hardly established. Fancy, white, is selling at 11@12; No. 1, white, 10@11; extracted, white, 5@6; dark, 4@5. Beeswax, 25@26.
M. H. HUNT,
July 21. Bell Branch, Mich.

KANSAS CITY.—Light shipments of new honey are coming in. Fancy white comb, 13@14; No. 1 white and amber, 12@13; extracted, white, 5½@6; amber, 4½@5. Beeswax, 22@25.
C. C. CLEMONS & CO.,
July 21. Kansas City, Mo.

COLUMBUS.—Market is entirely bare of honey so far as jobbers are concerned. Some nearby producers bring in a little; but nearly all we have seen has been very dark. We are having many calls, and can handle white stock to advantage. Price not quotable.
THE COLUMBUS COMMISSION & STORAGE CO.,
July 20. 409–413 N. High St., Columbus, O.

NEW YORK.—Our market is in good shape for new comb honey. We have had several shipments of white comb honey from Florida, of late, which has sold at 10@11½. Market on Southern extracted honey is very steady, there being a good trade for the cheaper grades. We quote our market as follows: Ordinary, per gal., 50@52; good, 55@60; Florida white, 6c per lb. New California is beginning to arrive. Beeswax market is quiet—prices ruling a little lower. We quote pure beeswax at 26½@27½. Write us for shipping instructions.
FRANCIS H. LEGGETT & CO.,
July 23. Franklin and Varick Sts., New York.

DENVER.—Our honey market is steadily improving; Small shipments of new honey are coming in slowly, and merchants are picking it up readily. New comb honey in our cartons is what the trade wants, and we are supplying the trade at 11½c. Our brand of white extracted, put up in our style jars, is meeting with splendid sale. Could handle same at 6c.
R. K. & J. C. FRISBEE,
July 11. Lock Box 1014, Denver, Col.

PHILADELPHIA.—Honey coming in slowly; new crop fancy white comb selling in a small way at 14½; Southern extracted, 5½; white clover, 8. Beeswax, 25. We are producers of honey; do not handle on commission.
WM. A. SELSER,
July 20. 10 Vine St., Philadelphia, Pa.

CHICAGO.—Some new comb honey begins to arrive, and in a small way brings 14c for 1-lb. fancy white sections. Extracted unchanged. Water white, 6c; light amber, 5½@5¾; dark, 4½@5. Beeswax, 28@30. Extracted honey will move promptly and is wanted.
AMERICAN BROKERAGE CO.,
July 27. Chicago, Ill.

SCHENECTADY.—A small lot of new comb has made its appearance in this market. It shows the effect of recent dry weather, having a yellow appearance, and is held at 12c a lb. Recent rains may save the buckwheat yield, which bids fair to be a failure on account of drouth.
CHAS. MCCULLOCH,
July 20. Schenectady, N. Y.

CHICAGO.—Not any of the new crop of comb honey on the market this week; what little has come sold at 11@12c. Extracted brings 5@7 for white, according to quality; amber, 5@6; southern, fair to good grades, 4@5. Beeswax, 27. Market is in good condition for disposing of honey of all kinds.
R. A. BURNETT & CO.,
July 20. 163 South Water St., Chicago, Ill.

ST. LOUIS.—In the past few days we have had several inquiries for honey, both comb and extracted. Fancy white comb, 10; A 1, 9@9½; No. 1, 8@8½; lower grades, 5@7. Extracted, white, in cans, 5@5½; in barrels, 4; amber, in barrels, 3½; in cans, 4@4½. Beeswax, prime, 26@26½. In this section of country, on account of wet weather very little honey has been gathered yet. Bees doing poorly; for past ten days they have been doing better.
WESTCOTT COM. CO.,
July 20. St. Louis, Mo.

MILWAUKEE.—Since our last report the sales of honey have not been very large, although a fair demand has existed, and still continues; but the fruit consumption makes some difference with eaters of honey. There is not a very large supply of old stock left, and we shall be in good order for new crop of both extracted and comb. We quote fancy 1-lb. sections, 11@12; A No. 1, 10@11; No 1, 8@10; amber, 7@7½; dark and old, 6@7. Extracted, white, in barrels, kegs, and pails, 6@6½; dark and amber, 4@5. Beeswax, 26@28.
A. V. BISHOP & CO.,
July 21. Milwaukee, Wis.

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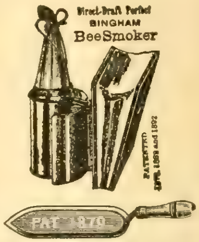
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. AUG. 1, 1898. NO. 15

STRAY STRAWS FROM DR C. C. MILLER

THIS YEAR nearly all my hives (eight-frame) have brood in the outside combs, probably because so little honey was coming in.

A QUEEN is said to be a perfect female, and a worker an undeveloped female. Is that fair to the worker, for parts fully developed in her are left undeveloped in the queen? Each is perfect in its place.

POSSIBLY beginners might overdo top ventilation; but I feel safe in saying that, whenever a colony is strong enough to occupy with brood a second story, it's well to have an entrance to each story.

DID YOU EVER THINK how rapidly a young bee grows? Dr. Donhoff found that a queen larva increased in weight 1500 times in 5 days. According to that, a baby weighing 10 lbs. at birth would weigh 7½ tons when 5 days old.

THAT WAS CARELESSNESS inexcusable in me not to give the author of that quotation on page 537 about the queen laying in center of brood-nest where the eggs should be. Turn to GLEANINGS, page 513, 2d column, 3d paragraph, and you'll find it was said by G. M. Doolittle.

ALTHOUGH the bees get no nectar from white clover this year to speak of, there seems to be rather more than the usual amount of white-clover pollen stored. Is this the general rule in seasons when white clover yields no honey? [No one has reported white-clover pollen, although some is being brought in here.—ED.]

WHEN MOVING BEES, Editor Hill says always have with you some cotton batting to promptly plug any leak that springs. That's good; and the same batting will be good to calk old hives before starting. I used putty last spring, but will never do it again — too much trouble afterward. [This is a kink worth knowing. Paste it in your hat.—ED.]

A PROFUSION of white-clover bloom is almost tantalizing when, as this year, the bees seem to get no nectar from it. [Yes, there are fields and fields of white clover; and why under the sun they won't yield is the biggest conundrum among bee-keepers this season.—ED]

AMONG OTHER SUGGESTIONS for the protection of useful birds given in *L'Apiculteur*, is that of the propagation, in primary schools, of instruction as to the general utility of birds. If all teachers in public schools take pains to thoroughly impress the boys that birds should be protected, and not destroyed, protective laws will hardly be needed.

WHEN MR. COWAN was here I mentioned, as one of my own inventions, fastening queen-cells on combs with wire nails. He asked me if I hadn't seen that in his book. I told him I had read his book, and it wasn't there. He turned to the page and showed it, and pulled out of his vest a pin such as he used for the purpose. But I insist that any Johnny Bull might think of a pin; but a nail! there's originality, there's genius for you!

THAT PARAGRAPH from C. P. Gillette, page 551, is interesting as helping to an understanding; but the next investigation might show very different results. Loads of honey, also of pollen, vary greatly. [In the pamphlet from which we made the quotation it is shown that Mr. Gillette made a large number of measurements, and from these he struck general averages; and as these averages agree with other averages given in former times, I think they must be very nearly correct.—ED.]

JUNE 22 I put the queens of six colonies in lower stories, leaving nearly all the brood in the upper stories, an excluder between. Eight days later I found in two cases three queen-cell cups containing eggs in the upper story. Had the bees kept those eggs eight days without hatching? had the bees carried the eggs up from the lower story? had the queen gone up through the excluder, laying only those three eggs, and then crawled back? did workers lay the eggs? or how do you explain the case? [I give it up.—ED.]

YOU WANT TO KNOW, Mr. Editor, page 550, how R. Wilkin knew it was royal jelly in worker cells. Because the larvæ were 1½ days old; and hasn't Dr. A. de Planta told us that, for the first three days, the food of worker larvæ is chemically the same as that fed to royal larvæ during the entire five days? In other words, all worker larvæ have royal jelly for three days. I've often seen an extra amount in worker-cells when larvæ were scarce, but never saw a cell half filled. Cowan thinks with Wilkin that laying workers may thus originate. [I do not see yet how R. Wilkin *knew* that the substance in the cells was royal jelly or common larval food. Granting that they are one and the same thing for the first three days, I would assume that it is nothing more nor less than the milk with a common worker grub.—ED.]

REIDENBACH fed to bees diluted honey colored deep red, killing the bees as soon as they had taken a little. In most cases he found not a trace of the colored honey in the honey-sac, but in the chyle-stomach beyond, just as if we should swallow directly into the intestines without having any thing get into the stomach. His experiment proves that field-bees first supply their own wants, then fill the rest in the honey-sac. [My observation is almost directly the opposite of this. A number of years ago the bees were gathering the juices from overripe raspberries on the bushes. As these were the Cuthbert red, the juice was of a pink color. I killed scores of bees just as they came from the berries, and in every instance I found the honey-sac filled with this pink juice. There is a little trick in pulling the bee apart without mutilating the honey-sac. Grab the bee by the thorax, then by the abdomen; give it a quick jerk, and the honey-sac will be left clinging to the thorax, in nine cases out of ten. I did not examine the chyle-stomach, but I do know that the honey-sacs were clear full, as the bees could hardly fly. It is reasonable enough to suppose, however, that the field-bees would first supply their own wants.—ED.]

YOU THINK, Mr. Editor, that color has nothing to do with stirring up the fighting qualities of bees, p. 538. I don't think, but I *know* that it has much to do with it "in this locality." If bees are cross enough they'll sting through white clothing; but they'll sting black when they'll not think of touching white, and hundreds of times I've seen them keep up an attack on the head of a black hat-pin in a white hat. A black hat-band is much the same. [I can readily see how mad bees might pay particular attention to a hat-pin head. I have noticed that, when angry, they will make a dart for one's eyes, for they seem to know as well as we that this is the tenderest part of our anatomy. Well, when they see the glistening knob of a hat-pin they will make a dive for that because of its resemblance to an eye. As I wear glasses constantly, about two-thirds of the bees make a strike for the glistening lens; and about the next minute they try some portion of my beard, and there I smash them. If they do not strike for my eyes they will go for my mouth. A smart rub at just that moment "fixes" them also.

I have worn hats of different colors among the bees, and I have never yet noticed that they pay particular attention to the black; but possibly, doctor, your bees may be crosser than ours. Will those who have hybrids or cross bees please report on this point? If it is a fact that black is obnoxious to them, then the sooner we settle it the better.—ED.]

REPLYING to your footnote, page 538, Mr. Editor, the only thing I happen to have at hand about length of bees' tongues is a quotation in *Australian Bee Bulletin* from Mr. Rankin, of the Michigan Experiment Apiary. He says the average lengths of tongues in that vicinity are: Black, 4.2 millimeters; hybrid, 4.9 mm.; Italian, 5.3 mm.; bumble-bee, 8.3 mm. "We made one direct cross, or an in-cross of one colony, and the bees from this cross have a tongue 5.5 mm., an increase of 1 mm. over the parent colony." Ask D. N. Ritchey for interesting facts. [How would it do if the enterprising queen-breeders of the country, instead of advertising five-banded or golden-yellow bees, would advertise those with long tongues? The golden-yellow craze never gave any better working bees; but a craze for bees with long tongues, or bees that stand wintering well, would give us something of value. If there is a marked difference, and no mistake, in the length of bees' tongues, then by all means let us give prominence to it. The glossometer—there's the rub. How would this do for a makeshift? Cut a piece of wire cloth, and so arrange it that it can be raised to various heights from a sheet of glass having upon its surface a thin film of honey. Now, then, to determine the length of the bees' tongues, confine bees to the wire cloth. After they are feeding, raise the cloth to a point where they can just reach it and no more. Now with a micrometer measure the distance between the wire cloth and the glass. Of course, it will be necessary to have the wire cloth of uniform surface or the measurement would be inaccurate.—ED.]

Ridge-Pole
Musings.

FOUNDATION NOT ALWAYS PROFITABLE.

Its Use a Convenience rather than a Profit; Deep-Cell-Foundation Experiments.

BY R. C. AIKIN.

The question of the use of foundation is one that is vitally connected with that of wax secretion. In the second and third Musings preceding this one, wax secretion was touched upon to some extent. Just now, since the new product, deep-cell or "drawn foundation," is on trial, much interest is manifested in the foundation question, and possibly no better time could be taken to offer results of experiments and some opinions on the matter.

Ever since the general introduction of foundation I have had more or less to do with it. At first there was a decided opposition to its use, both on the ground of the suspicion it would create, even though used in brood-chambers only, and because of the "fishbone," or tough bases, where used in section honey. I entertained grave doubts about the advisability of using it in sections, and it was a good many years before I could make up my mind that I wanted to so use it, preferring to stick to the old method of using natural-comb starters.

During the past eight years I have used many hundred pounds, principally of the Dadant make, and have made nearly a ton myself. I have used it in very narrow starters and in full sheets; have had many brood-combs built on it. I have used the Van Deusen flat-bottomed to some extent, and have, the past season, tried the new product known as "drawn foundation," using ten pieces in which the cells were about ¼ inch deep. I am now going to give as fair and candid an opinion as possible upon this subject. I would say, right here, that the chapter on "Use and Abuse of Foundation," in Mr. Hutchinson's book, "Advanced Bee Culture," is about as near the truth as any thing I have ever seen written on the subject.

Many years ago I made an observation hive which would take one to three L. frames. The first real study of foundation I ever made was when I put a sheet of it into that hive and watched it develop into comb. Foundation accomplishes two things in a very satisfactory manner when carefully used; viz., all worker and straight combs. It is a very convenient article for use in sections, so handy to put in for starters. I suspect that its convenience as a starter material will go further toward maintaining its free use in the years to come than will its value as a money saver or maker. I feel constrained to take a middle ground on this question.

From my own experience and study of the matter, together with all I have read on the subject, which has been much, leads me to believe that, in the great majority of cases where foundation is used, it is thinned more or less by the bees. The amount of thinning depends very much upon conditions. The temperature, needs of comb at the time, whether urgent or not, the amount of wax being secreted, and perhaps other minor points, all have to do with the matter. I hold to the opinion that wax is secreted more or less freely at all times during a honey-flow, the quantity varying as influenced by the prospect of its need, the presence of bees of proper age, and the state of the flow of nectar.

While there seems to be but little doubt that foundation is, in the great majority of cases, thinned more or less, it remains, I think, almost an undisputed fact that comb built upon it is not by any means equal to natural comb for tenderness and fine edible qualities. I refer strictly to the quality of the comb. It is self-evident that the very quality that makes it less edible is an improvement on its shipping quality. The product is less edible only in the matter of a somewhat increased toughness and amount of wax, the taste in no way being impaired.

If it is true that wax is usually secreted in sufficient quantities to hold the honey gathered—a belief I hold to—the use of full sheets in sections can not pay, viewed from the point of the saving of honey-consumption in wax-secretion. Neither can great stress be laid upon the thought of retaining bees to build comb that otherwise would field, unless we give up the generally accepted teaching that those under field age are the wax-workers. It seems that the economy of nature is such that provision has been made for all these things. The influences that bring on the honey-yielding plants also bring on the colony of bees; so that, when the flow arrives, there are in the colonies those suited to the various duties to be performed; and I sometimes wonder if we do not cease to be economical in too far departing from the natural.

As hereinbefore intimated, foundation is a very handy article; and if starters can be produced and used in this way cheaper than by natural comb, that will cause it to be used. Bees can start their own comb as well as we; but to induce the building in the place and manner that serves our purpose to the best advantage is another matter. A starter — a very narrow strip of foundation, or bit of natural comb — serves the purpose of guiding the bee; and if the use of such gives as perfect a comb as do full sheets of foundation, we come right back to the question of wax-secretion.

It is claimed that the full sheet brings a better finish; but if so, it is only a minor point among many. I shall send to the Root Co. sections built out from brood foundation, from extra thin, from half-sheets, from very narrow starters, "drawn foundation," and natural comb, all in one super, and I doubt if expert judges can tell which is which by the finish. I have believed for years, and practiced accordingly, that the strongest point in favor of full sheets in sections was the extent to which they act as bait-combs. They do have some inducement in this way. We know that a colony can build a lot of comb in a very little time when it is needed; but to determine just whether foundation is a help in any great degree is a problem very difficult to determine. There has been a great amount of haphazard guessing done; but thorough practical tests are as "scarce as hens' teeth."

To take into consideration all fields and conditions, I do not think a wholesale use of foundation in sections is profitable. Starters or guides we must have from some source; and a bit at the top, and a like one at the bottom, serve the purpose. Some place much stress on the use of full sheets to avoid the building of drone comb, because worker is thought to be prettier. Years ago I admired a finished section of drone comb above that of worker-cells, and 'tis a fact that I did not know the worker comb was more beautiful until somebody told me so—don't even yet know it.

Now, when it comes to eating honey I will take natural comb before that on foundation, and the clear honey without *any* wax before either of the others. More than this, I find a whole lot of customers whose likes in the matter are just like mine, as to taking it with or without the wax; they are not versed on the foundation question.

As to the "drawn foundation," my own experience with last summer's limited test shows it to be no more objectionable than the old-style foundation. It "tasted" no more waxy. It looked just as nice. The bees took kindly to it, putting honey in it within 24 hours after putting it on the hive. I did not watch to see if it was sealed first, but know it was not the last to be sealed. Evidently my bees used it just as they would a piece of natural comb equally developed. The flow was quite moderate, comb-building a little tedious, weather rather hot, and general conditions favorable to excellent super work had the flow been more free.

I have seen one sample of the "drawn foundation" from another part of the State where the yield was better than mine. I do not know the conditions at the time it was put on; but there was a lot of extra wax plastered on for some reason. The honey was removed from the comb, and cells broken off to the foundation. The party who tried it was disgusted with it.

Super 3 was on a strong colony that was doing good work. The finish was good, considering the very moderate flow in which it was worked. This super I have sent to The A. I. Root Company just as it left the hive, together with samples of the sections from the other two supers. Notice that there were three supers on three colonies of different strength, but all worked at the same time.

Here are the numbers of the sections, and what they contained when put on the hives; and by referring to the maps you can see the position occupied All starters less than full sheets were put in so that the short way was up and down, the most of them running clear across the top of the section. No. 1, starter of Weed extra thin, 1½x2; 2, Weed thin, 1½x 2; 3, Weed light brood, 2x2; 4, Weed medium brood, 2x2; 5, 6, 7, 8, full sheets of "drawn foundation" (the new deep-cell product); 9 to 32, my own make of extra-thin foundation, 3½ long by 2 inches deep.

Super 2. Numbers 37, 43, and 49, full sheets of "drawn foundation;" 46 and 52, full sheets of heavy brood. All other numbers in this super, half-sheets of extra thin.

Super 3. Numbers 54, 55, 56, 58, 59, 60, 61, 70, 74, 75, 76, 77, 80, and 81, half-depth sheets, extra thin, with bottom starters; 57, 64, and 78, "drawn foundation;" 63, 66, 67, 73, very narrow top and bottom starters; 72 and 79, full sheets of heavy brood foundation; 69, drone comb starters, top and bottom. This is the super I have sent to Root just as it left the hive; and if he thoroughly examines it he can tell you how the different grades compare as worked in it.

Loveland, Colo.

[I will explain to our readers that this is the last of a number of articles written by R. C. Aikin last winter; but on account of its being at the tail end of the series it is a little belated.

I have spent half a day in looking over the honey; but, unfortunately, the maps and figures do not seem to tally in case of the drawn foundation, and I was therefore able to prove nothing; but as we know that the flat-base drawn foundation of last season, which friend Aikin is writing about, had thickened bases in some instances, at least, we will assume that at least a part of what he refers to came under the same objection. Drawn foundation with deep walls and *flat* bases is a thing of the past. Mr. Weed can now make in its stead drawn foundation with walls ⅛ inch deep, and natural bases, which, as I have said before, seems to eliminate the objection of "gob," or thick midrib.

Super No. 3 contained, according to the last paragraph of friend Aikin's article, a series of sections containing half-depth sheets with bottom starters; also another series with narrow starters top and bottom. In the earlier part of the article Mr. A. thinks no one could tell the difference. As he sent the crate on to us just as it came from the hive, and as the sections stuck considerably in pulling them out, I concluded he had not previously examined it. I found that all of the sections where the greatest amount of foundation was used looked more even than the rest. There were two or three sections of the other lot (mere starters top and bottom) that looked about as well; but there were also some among them that had almost entirely *drone* comb; and speaking of such I can not see how any one can think it looks as neat and pretty as sections all of worker. To me it has a coarse, rough appearance. I have asked several in our office, without first giving them my preference, and they seem to be of the same opinion. I do not mean to say that nice combs can not be secured with starters only at top and bottom; but drone comb is quite liable to be built. Some little time ago, by means of plaster casts I showed that *natural-built drone comb* is more gobby by considerable than worker comb off from ordinary thin foundation. I do not, therefore, see that friend Aikin would eliminate the trouble of thick midrib by using a scant amount of foundation. If the bees would always build *worker* comb, as they will do a good many times, then I grant that the difference will be in favor of the scant use of foundation.

There is one point that has, perhaps, never been thought of sufficiently. Mr. Danzenbaker is very particular, Mr. Weed says, to have full sheets of foundation, and those *sheets must reach clear out to the sides* — that is, come actually in *contact with the wood*. If it reaches to within only ⅛ inch, the bees will be pretty sure to make bee-spaces, or pop-holes. This is one secret of his getting such beautiful honey, Mr. Weed believes.

A good many other bee-keepers use full sheets, but there is almost a bee-space around the side and edges; and this, according to Mr. Weed, does not give the perfect slab of honey, which we so much admire.—Ed.]

RAMBLE NO. 149.

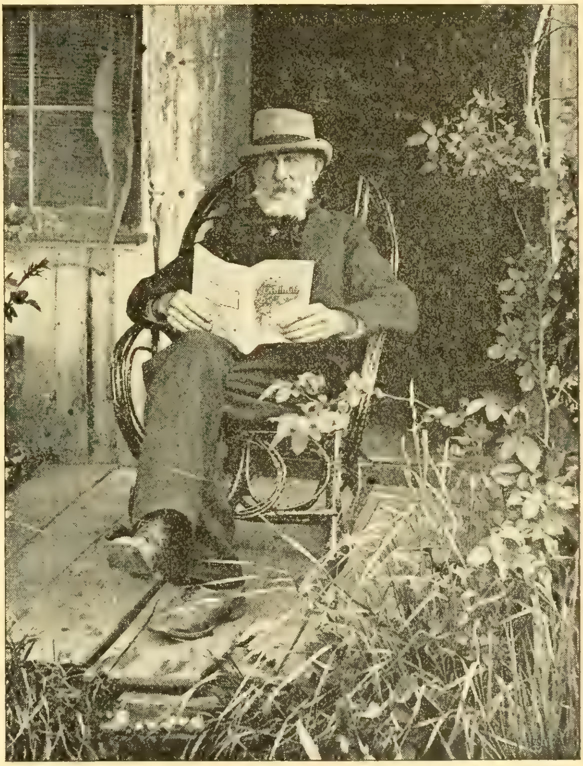
A Visit with Judge Levering.

BY RAMBLER.

Judge Noah Levering is another bee-keeper who gave me a welcome to Southern California and to Los Angeles. He is one of the veterans of the industry, and came to California about twenty-three years ago. Judge Levering was born in Ohio, and has lived in various portions of the West. He prepared himself for law practice in the office of Leonard Swett, who was afterward Lincoln's law partner. Mr. L. was well acquainted with the latter, and has many anecdotes and episodes to relate about the martyred president.

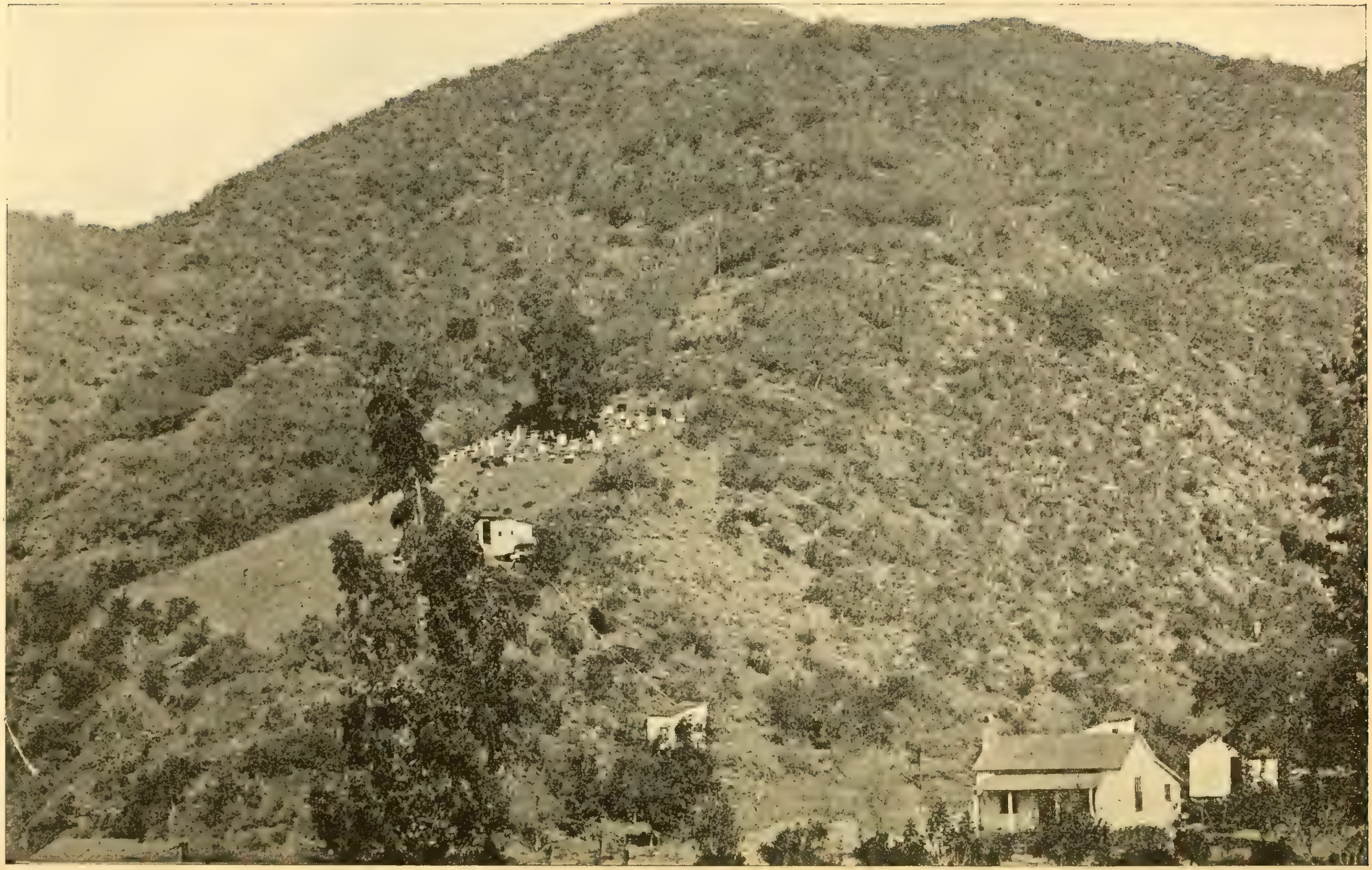
Mr. Levering practiced law in Sioux City, and was there elected County Judge; and while residing there he held several offices. He became interested in bee culture while living in Sioux City. His office work was so confining that he turned his attention to the bee-hive more as a recreation than for profit. His attention was called to the industry from reading an essay by Mrs. Tupper in the Patent Office report. He noted in said article a statement about the bar hive of Germany; and the idea came to him that, if they would build a comb to a bar, they ought to build it to a bar all the way round or to a square frame. At this time he had never heard of a movable-frame hive, and was quite elated over his invention, and proceeded to show his plans to the land agent. This gentleman blasted his hopes of becoming the inventor of a movable-frame hive by showing him Langstroth's work and the description of his hive, which had been patented but a short time before. This interview resulted in an increase of bee-fever, and it was not long until he had a swarm of bees in a movable-frame hive; and the first new brood-frame full of white honey looked so charmingly beautiful that, like a dutiful husband, he carried it over to the house and showed it to his wife. Then he carried it around and exhibited it to all of the neighboring wives (of course it will be understood that these other wives belonged to other husbands). Through his enthusiasm he became quite a noted bee-keeper as well as County Judge. In course of time he retired from the bench and removed to Independence, Mo., and engaged in mercantile business. In 1875 he came to California and had charge of a large apiary belonging to Judge Ross and others in Verdugo Canyon, a few miles from Los Angeles.

Mr. Levering has always been interested in the organization of historical societies. He was the leading spirit in such societies in Iowa and Missouri, and soon after arrival in California he was the first to organize the California Historical Society which is now a valuable factor in collecting data of historical events. He has also been a leading organizer of bee-keepers' associations in Los Angeles, both county and State, and has worked untiringly for the interests of bee-keepers in the unity of action in selling honey. He has been quite a prolific writer upon apicultural subjects, and was the first to start a bee-keeping department in one of the local papers, the *Herald*. His later writings have been for the *California Cultivator*.



JUDGE NOAH LEVERING.

In connection with Mr. Pryal, of Oakland, he commenced the publication of the *California Apiculturist*, the first California bee-paper. Owing to various reasons the paper suspended publication after running about one year. Though this State has several thousand bee-keepers they did not then seem inclined to support such an enterprise any more than they do at present. There have been several papers devoted to the industry started since.



APIARY OF JUDGE NOAH LEVERING.

The *Pacific Bee Journal* has enjoyed the longest life, but even that has now succumbed to the inevitable that has befallen those before it. Mr. L. has aided nearly all of the papers, in hopes that there would come a time when the bee-keepers would support a paper devoted to their interests. But the time is not ripe for such a paper on the Pacific coast.

Mr. L. has owned bees for several years, and has had the usual ups and downs of a California bee-keeper. He boasts of some good seasons when he obtained large yields of honey. He also laments an extraordinary season when he lost about 120 colonies in a mountain fire. When he saw the destruction, the entire surface of the canyon blackened and charred, and the honey in pools beside the charred remains of the apiary, with but two hives left, and these burned in spots, he says he never had such an undefined, discouraged, and desolate feeling in his life. The apiary is located 12 miles west of the city, and in sight of the Pacific Ocean. Here he has a ranch of 140 acres, which has been paid for largely from the proceeds of the apiary. As will be seen from the half-tone, the apiary has a unique location. All of the work is calculated for a rapid transit down hill.

From the apiary to the extracting-house the grade is a little sharper than it appears in the half-tone. With a cart well loaded with frames of honey it would be necessary to have a brake on the cart; for, if it should once get the start of the operator, woe betide the sweetness that would go rattling down through the brush. From the extracting-house the pipe leads to the tank in the little house below. The honey gets right down there in haste. When the honey is drawn into cans the grade is still down into the wagon, and still down through the canyon to the county road. Lifting is reduced to a minimum, which is an excellent feature for any bee-keeper to imitate. The sun wax-extractor is attached to the side of the extracting-house, thereby making it a combination affair. I believe I suggested to Mr. L. the advisability of providing a chute for the wax, but he thought he was chute enough himself for that precious material.

Mr. L has lost quite a number of colonies from time to time from starvation. His motto is that, if they have not honey enough to tide them through a poor season, then let them starve. He has fed bees until he is satisfied that it does not pay; but I am inclined to think that the most of the fraternity will not agree with him in that respect.

Mr. L. has something of a hobby in respect to hives. He uses a square hive with a frame 12x12 inches. He believes it is for the colony's greatest good to dwell in a hive in which they can cluster in the form of a ball, according to nature. A few of us, however, believe that a hive of a more elongated nature will answer just as well, especially in this climate. Mr. L.'s apiary neatly surrounds a gum-tree which sort o' anchors it to the hillside.

The apiary was moved to this elevated position from the fact that the canyon is narrow at this point, and the location they did occupy to the right of the house was too near the highway, and they were liable to annoy the traveling public. To keep right with his neighbors, even if it is an inconvenience to himself, is a rule of the gentleman's life.

In 1880 Mr. Levering made a shipment of two colonies of Italian bees to Auckland, New Zealand, a sea-voyage of 7000 miles. Several parties had tried to accomplish this feat, but had failed, and this was the first successful long-distance shipment made to those distant islands. His hive was so constructed that it gave ample ventilation. Old and strong combs with natural stores were used, and a sponge was arranged where the bees could get at it, and directions were attached, requesting that water be given them at stated times.

Mr. Crayton, of the San Francisco *Post*, was interested in the success of the shipment; and the two colonies, when put aboard the vessel at that city, were placed in the captain's cabin, and he personally saw that the directions on the hive were fulfilled. The first shipment arrived with but few dead bees. Other orders quickly followed; and Mr. L., in 1880 and '81, made many shipments, all through the same steamer and captain, and not a colony was lost. The bees were ordered by an association that was organized in New Zealand for the purpose of introducing valuable plants, insects, and animals from other countries. Owing to their failures heretofore to import successfully the Italian bee they had made arrangements to send a man to Italy for that purpose, and had set apart $2500 for expenses. The Australian papers, at that time, claimed that Mr. Levering was entitled to that money. It seems that others thought differently, for he never received it.

The successful shipment was quite an event for the New Zealand bee-keepers, and attracted much attention. Extended notices were published, not only in the New Zealand papers, but the Los Angeles papers also; and while this was quite an important affair there has never an account of it appeared in any of our eastern bee-papers, which matter will be set right, I trust, when this article appears.

During the past year Mr. Levering has come into possession of 260 colonies of bees through the death of a brother, in the extreme northern portion of the State. He is now in that locality, accompanied by the writer, who will, later on, give some experiences in the management of bees in Siskiyou County.

SMALL ENTRANCES DEFENDED.

Clustering Out Caused by Drones.

BY M. H. DUNN.

Editor Gleanings: — Permit me to say a few words in defense of small entrances vs. large ones. I have noticed in GLEANINGS of late considerable controversy on this line, the majority being for large entrances; and the only reason that I have discovered is to afford more air and to keep the bees from clustering outside of the hive. But to my mind, the large entrance, with the experience that I have had, has been a failure. The way I prevent my bees from hanging outside the hive is this: I have seen the time when they did hang out in great bunches. I blocked up the hive, but they would still hang out, and my neighbors' bees did the same. I talked to my neighbors, and the consolation I got was that "they always do that in warm weather." Now, dear friends, that is not the trouble. I began to investigate. The first thought that came to me was that I had always noticed few if any drones hanging out, and that I had never seen bees hanging out around the entrance of trees in the woods, no matter how large the swarm or how small the entrance.

About 18 years ago, when I first commenced in the bee business, I used a brood-chamber with 1600 cubic inches, and entrance clear across the front of hive, ½ inch deep, and a flat board for a cover, with no shade whatever; and the result was that a half or more of my bees were idle all through the honey season. To get the best results these bees had to be set to work. So I set to work to master the situation.

The reason for their hanging out was, in my opinion, the intense heat within; and in order to save the brood from suffocation they hustled out, and, consequently, became indolent. In the course of time this state of things changed with me, at least, and this is the way I did it:

I made my own hives, 2000 cubic inches for brood-chamber, with entrance in center of one end, 4 inches by ⅝ deep, using double or two story high, and, when putting on the second story in the spring, I remove all drone comb, if any, out of the brood-chamber and never permit any drones to hatch unless from some choice stock. This is the first step toward disposing of the heat. I make my covers with 2½-inch cleats on top, and when the warm weather begins I have a shade or roof, as it were, made of four shakes, and face my hives to the east or southeast, lay the four shakes on top, and four more set up on the south side, about six or eight inches from the hive, and you have a complete shade and a free circulation of air all around the hive. Eight hundred shakes and four hundred lath will make shades for a hundred colonies. Lay down two lath two feet apart, then place eight shakes on top of those, and lay on two more lath, and nail all together; then saw the lath in two in the middle, and they are ready for use. I never allow the hot sun to strike my hive after 10 o'clock in the morning; and by a free use of the extractor, or for comb-honey tier-up, you will not only get the best results but will infuse new life into your bees, and they will just tumble over one another to get in and out. Since I came to California I have seen the thermometer register 130 for three or four days, and not a bee hanging on the outside of the hive, but all were hustling.

Now, brother bee-keepers, try it. The remedy is cheap. By keeping your drones down you save large quantities of honey, and avoid swarming to a certain extent.

Now begging your pardon, Mr. Editor, for a few more remarks, I will close. The bee-keepers in California this season will have to feed or lose the most of their bees, as there has been only about three or four inches of rain in Southern California this winter, and the sage has not bloomed, and is making no growth, and the outlook is rather discouraging. Those who can get through with their bees will undoubtedly reap a rich reward next season. I have my bees here in the valley, and they are in fine condition. I have 101 colonies.

Fullerton, Cal., June 22.

[There is no question at all that, when hives are too small, the bees are more likely to cluster out. In our practice, a single brood-chamber of eight-frame capacity, L. size (nearly 2000 cubic inches), is not large enough. I can hardly believe that drones have very much to do with the matter, because I can not see any reason why they should. Ample shade is important — very important; and where there is no shade from trees or bushes, then some kind of shade-boards must of necessity be used. The fact that you run your hives of the capacity of 2000 cubic inches in *double* stories would in most cases—perhaps in all — prevent clustering out. Here is the secret of the non-clustering. I found this to be true last summer at our out-yard; but a double-story hive, with deep entrance, is, in my judgment, better.—Ed.]

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of C. Atkinson.

We present a view of Mr. C. Atkinson's apiary at Tockwith, near York, with the owner seen in the background. Mr. Atkinson being a well-known Yorkshire bee-keeper and honey-producer on a comparatively large scale, we were desirous that readers should know a little as to himself and his apiaries, and consequently made bold to express this much in asking for a few particulars. In response, Mr. Atkinson kindly wrote as follows:

"Yes, I have served a decently long apprenticeship. It must be twenty years since I first became part owner of a stock of bees in a skep. At present I have between fifty and sixty colonies in frame hives, and for a few years the number has varied little. I first caught the 'bee-fever' after hearing the expert lecture in the bee-tent at the 'Royal' Show held at York, and for some years my bee enthusiasm gave a quietus to nearly all my other summer hobbies. One needs to be in real earnest, though, to become a good bee-keeper; and without close attention, and a fair knowledge of the subject, success is seldom attained. In our neighborhood little else than clover honey is gathered; but few districts are better for this particular bee-forage. Years ago I used to go twenty-five miles to the moors for heather honey, but that was when the 'fever' ran high, but I still retain pleasant recollections of the former outings.

"My average take per stock for the last four or five years is between 50 lbs. and 60 lbs. Do I favor the Wells system? Yes; but the bee-keeper must know his work, or he'll often find one end of his hive minus a queen. I invariably work those long combination hives—seen in front of the sun-dial in picture—as twin hives. Being compelled to economize space, I never disturb two single stocks in order to establish them in a Wells hive; but for working up small stocks (nuclei of the previous season with young queens) I find the system works well, and the result satisfactory. My dummies always become blocked with propolis, but I don't trouble, having little fear of the bees disagreeing if both lots are allowed access to super at the same time when honey is coming in.

"I never have many swarms; but in order to have young queens I usually get my cells from the few stocks that do swarm, and find this a convenient way of getting the necessary young queens, and I think queens raised in this way compare favorably with those bred on advanced and approved lines. I don't like pure foreign bees for Yorkshire, but nearly every hive in my apiary shows the Italian cross. Foul brood I've had no experience with, nor do I wish to have any.

"I run my hives mostly for extracted honey, and I think 180 lbs. is the most I ever took from one colony. In recent years, however, I have not troubled with a separate account. Have I much trouble in disposing of my honey? No, not a great deal, and, as a rule, I keep over each year about a quarter of a ton, and then, if the crop is a failure, as it is apt to be some seasons, I am still able to supply my most regular customers

"I have, of course, my favorite hive (my own invention, you may be sure); the bees, perhaps, are not so conscious of its many 'points.' Anyway, the result doesn't show it off much more favorably than it does some of the other patterns."—*British Bee Journal.*

APIARY OF C. ATKINSON.—FROM BRITISH BEE JOURNAL.

THE ORANGE-TREE.

BY J. H. MARTIN.

The fruit-bloom in Southern California is quite a factor in the production of honey; but the most of it from the peach and the apricot, and many other fruit-trees, goes to brood-rearing. It matters not how many peach-orchards surround an apiary, we never hear of peach-blossom honey upon the markets; and if there is any produced for commercial purposes it is found mixed with honey from other sources.

The orange-tree, however, produces a profusion of bloom upon which the bees work industriously; and where the orchards are most abundant there is quite an amount of that quality of honey produced.

Orange-growing is increasing every year; and to give your readers an idea of the magnitude of the business I would say that the shipments for the past year were 12,000 carloads; and but for the damage done by frost it would have been over 15,000. From present indications there will be 20,000 carloads of oranges to ship during the coming year.

The orange-tree is an evergreen, and beautiful at any time. The clean smooth trunk and limbs, the dark-green foliage, and symmetrical form, make it a veritable aristocrat among trees. The golden fruit enhances its beauty, and it is not uncommon to see the fruit and bloom on the tree at the same time. The blossoms in the photo are nearly natural size; and when in full bloom the tree is a mass of white, reminding one of a bride adorned for the marriage.

The blossoms are very fragrant, and the air is filled with the perfume, much resembling the odor of the old eastern lilac. The bees work with utmost industry while the groves are in bloom in April or May, and they will fly several miles for the nectar. The writer knows that his bees secured orange-blossom honey from an orchard six miles away, and recently Mr. Wilkin has written me that his bees were getting orange honey from orchards eight miles away. Ordinarily bees will not go so far. I doubt if they ever were known to go so far for peach or apple bloom; but the orange has such a strong odor that, if a breeze is setting toward the apiary miles away, the bees catch the odor and follow it; and, while they get a little honey, the distance is too great for them to get it in paying quantities.

BRANCH FROM ORANGE-TREE.

Orange honey is of fine flavor and color; and as there is but a limited amount produced it should command an extra price. Dealers, however, do not hesitate to brand whole carloads of honey as orange, when it is something entirely different.

With the increasing acreage and the increasing size of the present trees, there is no reason to doubt that, in the future, a large amount of this honey will be produced, and it will be possible for us to sell it upon its merits.

Oro Fino, Cal.

[Genuine orange honey is fine in flavor, not unlike that of the fruit itself; but as Rambler says, it is very limited in quantity. At least we have never been able to get hold of the genuine article.—Ed.]

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE

SUNDRY QUESTIONS ANSWERED.

A correspondent, after telling that he has just commenced to take GLEANINGS, and intimating that he is only a mere tyro at bee-keeping, desires me to answer several questions in short plain style, which I will endeavor to do, not only for him, but because some of them have been asked by several others.

PURCHASING BEES.

Question.—What price ought I to pay for a colony of Italian bees in a movable-frame hive?

Answer.—Much depends upon the season of the year and the condition of the colony. They are usually sold for from three to four dollars in the fall, and from five to six in the spring. The reason for the difference in price seems to be the risk in wintering. Some winters bees winter universally well, not only with the specialist, but with the novice who knows nothing about getting bees in good shape for winter. Other winters, like the early eighties, from fifty to seventy per cent of all the bees die throughout the United States and Canada. If ten or more colonies are purchased of one party the price should not be over $3.50 in the fall for each colony, or $5.00 in the spring, the buyer receiving all good ones at that. Colonies could be bought for less; but good first-class colonies, in good frame hives, ought to command as much as that, even in these low prices for honey, and I would not advise a beginner to purchase poor colonies to start with. In an average season, in a favorable locality, such a colony of bees should give fifty pounds of comb honey, besides one good swarm. That is, the old colony and the swarm should produce that amount. The honey should bring ten cents per pound, or $5.00, which would give the purchaser his money back, even if he lost one of the colonies, or fifty per cent of his bees during the winter.

DISEASED BEES.

Question.—Are bees seized with disease or epidemics?

Answer.—There is only one of any amount, aside from our occasional wintering troubles, and that is termed "foul brood." The cause of our wintering trouble, "doctors" do not agree upon, some claiming that continued cold causes it; others, confinement, dampness, pollen, lack of ventilation, etc. Whatever may be the cause, our greatest mortality occurs during the latter part of a long steady cold winter, an open winter being favorable to the successful wintering of bees.

Foul brood is of a different nature. The character of the season has nothing to do with it. So far it is doubtful whether any know the cause, except to guess at it. However, all agree that the disease is carried in the honey. One bee-load of honey taken from a diseased hive to a healthy colony is sure death, in time, to that colony, unless the bees are driven from their combs to a clean empty hive; so the greatest possible care should be used, where a colony is discovered having the disease. For symptoms and cure I would refer the reader to the A B C of Bee Culture, as published by The A. I. Root Co.; and not only for foul brood, but for all general information on the subject of bees. No beginner should try to keep bees without first procuring one of the many good books we have on the subject of bee culture.

COST OF BEE-HIVES.

Question.—What should be the cost of a bee-hive 16x24x11, with chaff box and tin cover, the same to be painted two coats?

Answer.—I should guess from $3 00 to $4.00 for a single hive; while if ten to twenty were wanted at one time, $2.50 each ought to buy them, including frames, sections, and all. But, let me ask, why make such a hive? It is out of the regular size of hives, and could not possibly give better results than any of the hives now in use. There are four styles of hives in quite general use—the Langstroth, Quinby, Gallup, and American, any of which would give as good results as the one spoken of, and at a less cost. Besides, all of the sections, frames, etc., to these hives fit the shipping-cases, extractors, and other conveniences manufactured by most of our supply-dealers. A complete Langstroth hive can be bought at considerably less than the lowest figures quoted, in lots of ten or more.

HONEY-YIELD.

Question.—How much honey should an Italian colony average annually?

Answer.—Very much depends upon the location and management. Taking the United States through, fifty pounds per year to a colony, on an average, among the bee-keeping specialists, is about what they secure. My average yield for nearly twenty years, up to the time I went into the queen-rearing business to so great an extent that I had to weaken nearly every colony in the apiary to make queen-rearing a success, was about eighty pounds to each colony, spring count. Best average during any one year was 166 lbs.; poorest, 30 lbs.

ALSIKE CLOVER.

Question.—Does alsike clover suffer from drouth?

Answer.—To about the same extent as does red clover, as it has a very similar root; but no kind of clover is infallible as to its honey yield. Very dry or very wet weather is against the secretion of nectar in flowers, and especially are cool or cold nights damaging. In my opinion this last is the cause of more failures of honey than all other causes combined, unless it be days in succession of cloudy rainy weather, together with high winds, which prevent the bees from leaving their hives in search of stores. There is an occasional season when bees are kept at a loss, seasons in which they hardly secure a living during the summer months, saying nothing about laying up stores for winter.

WAX-MOTHS.

Question.—Is there any danger of losing colonies by moths or other insects?

Answer.—The larva of the wax-moth is about the only real enemy the bee has. These feed upon the combs, and in very weak colonies often destroy the combs, changing them by consumption from the nice symmetrical cells for brood and honey into a mass of webs and cocoons. However, there are no good colonies destroyed from this source, especially Italians. In fact, where pure Italian bees are kept exclusively, these pests are rarely ever seen. Still, combs not protected by bees are always subject to their ravages and should be looked after during warm weather. If signs of worms appear, the combs should be placed in a tight room, barrel, or box, and fumigated with burning sulphur, having all fixed so there can be no possible danger from fire. The section honey should also be watched, after it is taken from the hives; and if many combs are seen having little white flour-like spots or lines upon them, these should be sulphured. Much more care is required in fumigating them than is required in treating the brood-combs, for, if too much sulphur is burned, it will give the nice white combs a greenish hue which deteriorates its market value; one ounce of sulphur to every 25 cubic feet, in box or room, is about the right amount to burn. After the smoke has been confined for ten or fifteen minutes, let it out by opening a door or otherwise. No such precaution is necessary with the brood-combs, and for them I generally use twice the above quantity.

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE MOSQUITO-HAWK AN ENEMY OF THE BEE; A REPLY TO A. J. WRIGHT.

Mr. Editor:—We notice on page 471 an article from A. J. Wright, in which he seems loath to believe that the mosquito-hawk, or dragon-fly, is an enemy of the bees. However, he modifies his position somewhat by saying he does not know what the "heated atmosphere" of Florida may be capable of producing in the way of dragon-flies. Whether the "atmosphere" produces them or not, we can assure the gentleman that they appear from *some* source in countless myriads, and I have watched swarms of thousands of them catching bees. We don't doubt that they catch mosquitoes. Surely such vast hordes should be good for something, and we are ready to admit their beauty and all that; but one's appreciation of the beautiful fades somewhat when he sees his bees vanishing by the thousands. We are thankful to say they do not bother us all the time; but when they do come it reminds us of an old-fashioned visit of the potato-bugs in the North—very trying to one's nerves while they are with him. Perhaps if we say the mosquito-hawk is a cannibal it will raise a protest; and if we say they will even devour themselves to a certain extent, it will not be believed; yet such is the case. If we remember rightly, it was H. E. Hill, editor of the *American Bee-keeper*, who tried the experiment, proving conclusively that they would devour each other, and even eat themselves as long as life lasted. The dragon-flies of the North are comparatively harmless, as they are not numerous; but here it is different, as they come by tens of thousands. Any bee-keeper in Florida, especially those near the coast, can testify to the destructiveness of the insect from experience.

M. W. SHEPHERD.

Mannville, Fla., July 1.

HOW TO START FOUL BROOD.

The subject of foul brood being started from chilled brood has been mentioned several times in GLEANINGS, and has been called spontaneous generation. I do not want to be misunderstood. I do not believe in spontaneous generation any more than Mr. Root does; but I say foul brood can be started by chilled brood, for the germ necessary to produce it is in every healthy larva, but unless it dies and decomposes in a certain way it will never develop. In 1892 I started some nuclei for queens. The bees deserted them the same day. I cut out considerable drone brood, and put it in a pile in one corner of my bee-yard. That night it turned cold, and the brood froze a little. Finding my bees had left the brood I had put out for nuclei I piled it all in a heap. In about ten days I went back, and it smelled very badly. I found some bees sucking at it, which I did not want for decency's sake; so I put it in a tub and poured water on it, put a rock on it to sink it, went back a few days later, and found thousands of bees watering there. I at once put it in a pot and boiled it. In June, after about two months, I found some foul brood. I began to investigate, and found it in 20 or more hives, and soon found it in 50 or more.

I asked permission of Mr. Atchley to bring a piece of comb to his house, securely wrapped, for him to examine. He granted it, and he and Dr. Howard and Dr. Marshall all said it was foul brood, and a bad case at that, and told me it would kill all my bees; that there was no cure for it. The cure, I found, was a mistake in them, for I did cure it. I examined all the bees around me, but never could find but one small lot close to me that were diseased; so I have believed with all my heart it began there. This is a matter that can be settled by trying the following plan. If it does not start foul brood, the man who experiments may draft on me for $5.00, which will pay for all the trouble it will cost him. Here is the plan:

Cut out about 3 gallons of brood, both drone and worker. Put it between ice, so it will freeze to death, then put it out in some warm place, about 70 or 80 degrees. Keep it in bulk, and moist all the time for ten or twelve days; then put it in water, and make the bees sip at it a few days, and that will be sufficient. If you can not find foul brood in your hives in the second catch of brood hatched, draft on me, First National Bank of Van Alstyne, for $5.00. J. F. TEEL.

Elmont, Tex.

[I do not think there will be very many, friend Teel, who will want to try your experiment. We'd rather accept your word for it.

A knowledge of how the disease may be produced may be helpful in showing how a cure may be effected. It would certainly point out one of the means for prevention.

I will explain that friend Teel wrote us, some time ago, stating that foul brood would develop from dead brood. I understood him to mean that such brood would invariably develop the disease. I accordingly wrote him that *that* could not be true ; for corn could not grow where none was planted, and that disease could not be generated unless the microbes were already in the body ; that spontaneous generation was an exploded theory. It now appears from the article above that friend Teel accepts all this, but takes the ground that foul-brood germs reside in *all* healthy bees, and that, under favoring conditions, they will develop, and cause what is known as "foul brood." This may or may not be true.

We know that, when a person is all "run down," he is much more liable to have an attack of typhoid fever or some other infectious disease than one who is in perfect health. Indeed, I believe that, if one is perfectly healthy, he will be able to resist almost any contagious disease.

Referring to Teel's theory I should rather take this view of the matter : That the *Bacillus alvei* germs (foul brood) may or may not be present in the yard. If the brood is allowed to die, and it is subjected to treatment like that described above, these floating germs by some means might find lodgment in the dead tissue ; if so, then foul brood will develop ; but if they are not present, then the dead brood simply dries up and does no more harm than so much inanimate matter. This, I think, accords with the theories of our best physicians and scientists.—ED.]

FOUL BROOD.

Mr. E. R. Root:—Your letter of July 5, with reference to the foul-brood pamphlet which you are getting out, was received, and the proof carefully read. Your pamphlets will be of great value to the bee-keepers of every land, and all who keep bees or ever intend to do so should get one just as soon as they are out.

I am pleased to learn that you are going to publish in the same pamphlet a copy of the Wisconsin foul-brood law, which was prepared by Mr. N. E. France, of Platteville, Wis. It is perfect in every respect, and is by far the best in the world. It was through a recommendation from Mr. Hutchinson that I was chosen by the New Jersey State Board of Agriculture to write that article for their foul-brood bulletin.

Every bee-keeper in the world should get one of Dr. Howard's books on foul brood, as well as the very valuable one that you are getting out. WM. MCEVOY.

Woodburn, Ont., Can.

LARGE AND SMALL HIVES; SECTION-HOLDERS PREFERRED TO T SUPERS; PLAIN SECTIONS TOO LIGHT IN WEIGHT.

Our climate here in Arkansas is quite different from that of Ohio or New York. Our seasons are much longer, but the flow is not so great. Our greatest flow is about the 20th of May.

As to hives and inside fixtures I have tried several different kinds—the little box, the big box, the tall box, the low box, the lying-down, or long-idea hive, and the old-fashioned Armstrong and L. hive; and, last, the eight-frame Dovetail hive, which I have adopted entirely, as the size is better adapted to our seasons and climates than the larger ones.

Four or five years ago I commenced with about ten box hives, and purchased a few of your Dovetailed hives equipped with the Hoffman self-spacing brood-frames, with section-holders, using 4¼x1⅞ sections, and I found them to be just the thing. I have now 80 hives of that pattern; after using several other kinds of super arrangements, including the famous T super, I can say this, that Dr. Miller and his followers can have all the T supers, as I would not use them when, in my judgment, the section-holder arrangements are so far ahead.

Now as to fence separators and plain sections, I am trying them this season, and can say they have not proved satisfactory. Some claim they do away with pop-holes, or bee-ways, in the corner ; with me it is very different. The holes are there just the same, and do not hold out in weight, as I have some well-filled ones that weigh from 14 to 15 oz., while the 4¼x1⅞ weigh from 15½ to 16½ oz., which gives better satisfaction in the market. However, I shall try them more fully before I pass the death-sentence. Mr. Pettit's idea of perforated dividers, or separators, described on page 47 of January 15th GLEANINGS, is just my idea. It gives better-filled sections, and gives freer passage for the bees; and I am sure those who use them would be willing to pay a little more for them. HARRY HAWKINS.

Van Duzen, Ark.

[I saw a plain section at a restaurant in Cleveland that had corner holes in it just the same as the old style. On the other hand, I have seen plain sections that had no corner holes. During this year of scant nectar supply, it would not be surprising if the sections should not be filled out as full as on years when the supply is plenteous. That might account for your plain sections being under weight. But even if it did not, the tendency in nearly all markets is for still lower weights; and in Canada they want a section, I believe, that runs not over 12 ounces ; and I notice there is a tendency toward a similar weight in this country. There was a time when sections full 2 inches wide were the only ones sold. Then came $1\frac{15}{16}$; still later, $1\frac{7}{8}$. So far from staying at this size it has a tendency to go under rather than over.—Ed.]

SPECIAL PREMIUM AWARDS AT OMAHA.

The following special premiums are offered in advertising by the *Nebraska Farmer* in the Apiary department of the Trans-Mississippi and International Exposition :

1. For the best, largest, and most complete display in apiary goods and supplies	$10 00
2. Best and largest display covering the greatest number of varieties of comb honey, quality and marketable shape to be taken into consideration	5 00
3. Best and largest display covering the greatest number of varieties of extracted honey, quality and marketable shape to be taken into consideration	5 00
4. Largest and best display of designs of beeswax work	3 00
5. Largest and best display in unrefined beeswax	2 00
6. Largest and best display of bees and queens	3 00
7. Largest and best display of honey-producing plants, mounted, with their botanical and common names attached	2 00
8. To the person giving the best exhibition, on Trans-Mississippi honey-day, of handling bees and extracting honey	5 00
9. To the State making the best display of honey, bee-supplies, bees, and queens, on Trans-Mississippi honey-day	5 00
10. To the person making the best display of honey, bee-supplies, bees, and queens, on Trans-Mississippi honey-day	3 00
11. The best and largest display of culinary products in which honey is used instead of sugar	3 00

The above special premiums are open to the world, and will not in any manner interfere with awards to be given by the exposition. Bee-journals of the United States and Canada, please copy. E. Whitcomb.

Friend, Neb.

APIS DORSATA.

Mr. E. R. Root: — I have read with a great deal of interest your report of Mr. Benton's experience with *Apis dorsata*. I have made every inquiry about them here from the natives. They all tell great stories about what I take to be the same, but I have not heard of any in reach of me yet. Last week I had two days out in one of our largest jungles ; but on inquiries of the jungle patrol I was informed that while usually many bees are found in the jungle, this year they seem to have failed to show up. Every thing seems to point to their being migratory. However, the fact that the government lets out the gathering of honey and wax to a contractor whose business it is to make his profit by seizing every colony he can find at its highest development, may indicate a habit which, if the bees were undisturbed, would not exist.

This year has been a very busy one with me, and I have not had the opportunity to give either time or serious thought to the matter ; still, I am gradually accumulating information that will be of assistance to the cause in the end. Beeswax sells here in its crude state for about 20 cents a pound.

If I had time I would write you of some other bees I have found—interesting merely—and send you specimens. I mean to later. At present the rain is coming on us with our bungalow not yet quite ready, and I am at work almost all the time. W. E. Rambo.

Damoh, C. P., India, June 9.

[I will explain that Mr. Rambo is the missionary friend who is looking up for us *Apis dorsata*. As soon as he can procure queens he will make an effort to send them on to us. He expects, of course, to see what he can do in domesticating them in their own climate.—Ed.]

THE HONEY-PLANTS OF SOUTH DAKOTA.

It is very interesting to watch the work of the bees at this time of the year in the fields. To-day, July 11, they are very busy on prairie clover, botanically known as *Petalostemon*. There are two varieties here — the white and the violet. The white is now blooming ; the violet will be in a week. The bees work all the day long on these, and get considerable honey from this source. I notice it is white, and of good flavor.

The "shoestring" is now in bloom, and bees work on it. You can always tell when shoestring comes in bloom by the pollen the bees bring in. It is a vermilion red. There is no other pollen so bright. The honey is of excellent flavor, but of a peculiar purple color. It looks in the cells like light-colored amethyst. Last year I had several Mason jars full of it, colored like some of the bottles in the windows of drugstores.

The Rocky Mountain bee-plant (spiderwort) is commencing to bloom, and the bees are crazy over it in the early morning. It is indigenous here, as is also the Simpson honey-plant. These two grow together in the gulches and ravines and along the creeks, and abound all along the Missouri River. The Simpson honey-plant is done blooming. The seed is very small, but could be gathered easily by stripping the pods off the stem. A neighbor of mine has two acres of sweet clover, so tall that I can not reach the tops, and I am 5 ft. 10 in. The stalks are fully half an inch in diameter. If that would not tire a cow's jaw to eat it, what would? Still, they eat it here when it is small, and hunt for it.

Catnip is coming on. I have a patch of it about four feet high, and I am inclined to believe all that Quinby said about it as a honey-plant. My bees are on it every day, and all the day long till dark. I believe it would pay well here in Dakota to have an acre or two of it planted and cultivated like corn. I sowed seed last fall that produced plants that are now beginning to bloom.

For comfort and all-around satisfaction, give me a two-story hive, either chaff or single-walled, with a good honey-board, a Porter bee-escape, and an extractor.

Stephen J. Harmeling.

Marion, Turner Co., So. Dakota.

[Very good, friend H. ; but why don't you tell us how much honey you get? With such honey-plants as you name, it seems to me you ought to have a pretty good yield. Some way or other we have got the impression that the dry summers of South Dakota are not, as a rule, favorable to bee culture. We should be very glad indeed to be told we are wrong.—Ed.]

COMBS INSTEAD OF DUMMY BOARDS; PLAIN SECTIONS IN THE IDEAL SUPER, PERFECTION.

Several days ago, while making "dummy boards," with the view of using them for contracting the brood-chamber when hiving a swarm, the thought occurred to me, "Why not use two or more frames from the old hive, instead of dummy boards, and give the old colony the frames with starters in, that are taken away from the *new* colony?"

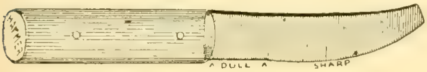
We have often been told to place the *new* colony on the old stand, and then take some of the frames, filled with young bees, from the *old* colony, and brush them in front of the new, and let them go in, thereby further depleting the old hive. If given two frames of brood, in all stages of development, from the egg to the imago, I want to know if such frames are not just as good for all practical purposes as two dummy boards.

Aside from what I have inquired about, I wish to say that I am giving the Ideal super a trial this year. About the 25th of June I put a few of them on my eight-frame Dovetailed hives. Yesterday afternoon, July 12th, I removed one of them, and found 27 out of 30 as complete sections as I ever saw. If the super had been unmolested 24 hours longer it would have been as complete as could be. The photos heretofore shown in Gleanings were not superior to the work done in my apiary in the Ideal super. I heartily commend the Ideal to all progressive bee-keepers throughout the land. R. B. Arnold.

Foster, Ia., July 13, 1898.

ANOTHER APIARY TOOL.

Mr. Root:—You ask for a simple all-purpose apiary tool. I will suggest a simple one for your consideration. It is a large butcher-knife, the end square for scraping the tops of frames, also the bottom-boards, in a small way. The back should be thick for forcing out wedges from supers. The edge is not ground within ¾ inch of the handle, so as to make a better pry on the end of the super in forcing the wedges. The end of the handle should be metal, to hammer with. In the one I use the blade is $\frac{3}{32}$ inch thick and 7¾ long. It is not shod with metal, but I often use the end as a hammer. For prying off covers the end of the blade does very well, and I can lift the heavy supers by forcing the blade in at the corner near the handle, and twisting or turning the knife. The knife is used, of course, for cutting and prying combs loose, and for many other uses. E. A. Chandler.



Mesilla, N. M., June 12.

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

C. M., Ohio.—There is some honey-dew this year—some fair quality and some miserable stuff, as you describe. If it is very bad, extract it and feed sugar rather than let the bees use it for winter. See editorials, this issue.

R. L. H., Ohio.—No doubt the reason your honey is colored is owing to the honey-dew that has been reported from several sections of the country. A very little of this stuff mixed with the clover and basswood will make it all "off color," and "off" in flavor in some instances.

W. B., Canada.—There are generally quite a number of queens, either hatched or in cells, at the time of the issuing of second and third swarms. Second swarms may have anywhere from half a dozen to a dozen queens, but usually not more than one or two.

J. M., Pa.—If you have had foul brood in your apiary you ought to destroy all combs, boil all the hives and all the implements you have been using. Should you ever wish to start bee-keeping again, or should any one in your vicinity attempt to do so, the disease will be sure to break out. Before doing any destroying, make sure you have the disease. If you will mail us a sample of the comb from which the brood died, perhaps we can help you to determine whether you have the disease or not. But be sure to wrap it in a stout tin or wooden box, first wrapping the comb in absorbing cotton.

S. S. K., Wis.—There are several ways of keeping queens a few days after they hatch until a place can be found for them in some nucleus or colony. But perhaps the most feasible way is the West queen-cage, illustrated and described on page 29 of our catalog. It should be used in connection with the queen-cell protector. When the cell is placed in the protector, the moment she hatches she emerges into the spiral queen cage, where she can be confined for several days. But the older she grows, the more difficult it will be to introduce her; for virgin queens a week or so old are not as easily introduced as laying queens.

J. H., Mich.—It is possible your manner of handling the bees has a tendency to irritate them, for they should not sting, even the crossest of them, in the way you describe. When handling a cross colony I would recommend blowing half a dozen puffs of smoke in the entrance; then when the cover is lifted, pry up and blow the smoke in a crack that is not wide enough to let out the bees. Now raise the cover and smudge them down. Do not handle them after a rain, nor in the morning or evening. From ten o'clock to one and two is the best time. Avoid quick movements and jars. If you proceed as above indicated you will have less trouble, we feel sure.

EDITORIAL BY E. R. ROOT

DEEP ENTRANCES OR HIVES ON FOUR BLOCKS.

I OMITTED to mention in our last issue, in referring to Mr. Burt's opinion of deep entrances, that he had tried hives raised up on four blocks, as mentioned by Dr. C. C. Miller. While it reduced swarming and prevented clustering out, yet when they did swarm it was a big nuisance to find the clipped queen, "because," said he, "there is an entrance on four sides of the hive, and one does not know where to look for her." The thought has since occurred to me that it is impossible to work over such hives without obstructing the flight of the bees to a greater or less extent. Then in going up and down through the rows between the hives one would be sure to obstruct the flight of bees, go which way he might. Mr. Burt used an entrance the full width of the hive, and two inches deep. This he thought more practical than raising hives up on four blocks.

Later.— Since writing the foregoing the following has come to hand, favoring the double entrance:

A PLEA FOR THE DOUBLE ENTRANCE.

Our hives are all made with a front and rear entrance alike, $\frac{7}{16}$ x 13 inches. Fourteen years ago I made a lot of wedge strips with the view of enlarging the front entrance to an inch, and doing away with the back entrance; but it didn't work. The enlarging of the front entrance is not equal to a direct draft through the hive, and for that reason I open the back entrance first; and when that is not sufficient I pry up the front end and put under the wedge strips. That gives a fine head opening; and sometimes, with a high wind, it might be too much of a good thing.

When the season is over I close up the back entrance, when the bees are not flying, to ¼ inch, and in the course of ten days I close the back entrance for the season. A few bees may come fussing around the back entrance, but their time isn't worth much, and they will soon find their way to the front.

T. R. SAWYER.

VISIT FROM D. E. MERRILL, OF THE W. T. FALCONER MANUFACTURING CO.

SEVERAL of us were out in front of the factory admiring some honey just brought in by Merton Chase, which his bees had put in plain sections, when along came a rider on a gear-cased Cleveland wheel. Without recognizing the man I called out, "Ride a Cleveland, and keep in front." "Just so," the rider responded. At this he dismounted, and introduced himself as Merrill, of the W. T. Falconer Co., Jamestown, N. Y. He had wheeled it some 33 miles from Cleveland — in fact, had wheeled it all the way from his home in Jamestown; but owing to rainy days he was not able to get here as soon as he expected, and consequently his stop would have to be confined to something like two hours.

"Oh my!" said I; "you *must* stay longer."

He would have been glad to do so, but he had made arrangements to get back to Cleveland at three o'clock, and so had to be there on time. Without further ceremony I ran him over the establishment at a hop-skip-and-jump pace. As it was then nearly time for him to start back I told him he must surely take dinner before going. He was not in the habit of eating much in the middle of the day, and did not think then he required any thing more than a bowl of bread and milk. Well do I remember how such a "dose" "goes to the spot" after a long ride—something nourishing and *wet* for a parched tongue. We repaired to the house, and I called for bread and milk. I laughingly remarked that I should have to "go a piece" with him, as his visit had been so short. A bowl of bread and milk was then brought in for each of us; and while we were eating, my sister remarked (my wife was away visiting), "I shouldn't be surprised if you went clear to Cleveland."

D. E. MERRILL.

"Hardly," I said. "That game ankle* would not push me to Cleveland."

Suffice it to say, we started out on our two Clevelands; and when opposite the basswood apiary we stopped to take a peep at that.

"Well," said I, "my game ankle is not bothering me so much, and I think I will go a piece further."

My ride and visit with friend M. were so enjoyable that, in spite of the occasional pain experienced in the aforesaid ankle, I found myself finally in the outskirts of Cleveland, some 27 or 28 miles from home, just in time to take a train that I could catch near by, back home.

I found Mr. Merrill to be a most agreeable companion, and, like myself, he is an enthusiast over bicycles, and the Cleveland in particular.

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*A few days before, I had been out swimming in the lake, and "got the cramp," and, as a result, the ankle was still lame.

E. B. GLADISH.

SINCE our last issue we have been favored with a visit from Mr. E. B. Gladish, the junior member of the Leahy Mfg. Co., Higginsville, Mo. If I am correct, Mr. G. is foreman or shop manager of the Leahy Co. He is a modest, quiet young man, and yet seems to combine the qualities necessary to run a shopful of men. He was here only half a day, and then went to Buffalo, N. Y. During the few hours we spent together I found him to be progressive, and alert to the "kinks" of his trade, and not only eager to impart but grasp that which is new. GLEANINGS wishes him a profitable and enjoyable vacation after his siege of long-hour runs.

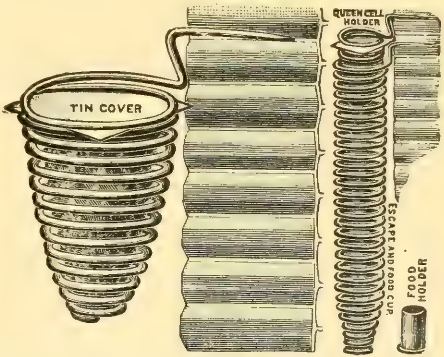
RAISING QUEEN-CELLS A LA DOOLITTLE; THE HOME OF THE HONEY-BEES HAS MADE A SUCCESS OF IT AT LAST.

OUR Mr. Wardell, formerly of New Philadelphia, Ohio, and who has been with us for several months, has been experimenting with different methods of queen-rearing. Some little time ago he requested a copy of "Doolittle on Queen-rearing," and a few days ago he asked me to come and see what he had; and, sure enough, he had twelve as pretty queen-cells, secured from Doolittle artificial cups, as one ever saw. They stuck down like great large peanuts from the bottom edge of the comb, and from the standpoint of a queen-rearer they were beauties indeed. I took several snapshots of these and of similar lots of cells that he had so secured, and hope to present you a view of them later. His *modus operandi* is as follows:

He prepares artificial cell-cups exactly as explained in Doolittle's book. These he grafts with larvæ from our best breeding-queen, and they are then stuck on the bottom edge of a comb or of a stick running horizontally across the brood-frame from which the comb has been cut. Cups so prepared are then put into a colony having an old queen which the bees are evidently trying to supersede. In such colonies these artificial cell-cups with their grafted larvæ are accepted at once. After the cells are drawn out and capped over they are removed and put into another hive that he calls his "nursery." This hive contains a queenless colony; and as it is strong in bees the cells are kept at the proper temperature necessary for the perfect development of the imago queens. On or about the ninth day the cells are cut out and slipped into one of Noah D. West's queen-cell protectors. This protector cage is then slipped into one of the hatching-cages, at the bottom of which are a few drops of honey to feed the young queen when she hatches. If she hatches the next day, or two or three days later, it does not make much difference. She is confined in the long spiral cage below, and can be taken out and introduced whenever he is ready for her.

Mr. Wardell finds that he obtains the best results by giving these artificial cell-cups to colonies that are about to supersede their queens. Such colonies do not become restive, but go right on building out and completing batch after batch of cell-cups. From one colony in particular he has taken three batches, and is now giving them the fourth. As they already have a mother in the hive they do not become discouraged, but go right on making the building of cells their specialty.

One great feature of the Doolittle system is that it enables one to rear *all or nearly all the queens from one selected mother*. In this case it happens to be the Alley queen, whose queen-daughters are beautiful as well as her bees. They are hardy, prolific, and hold their own with any other colony for honey.



Mr. Wardell is very enthusiastic over the Doolittle system, "because," said he, "my queens are all from one stock, and the very best I have."

EXPERIMENTS WITH THE NATURAL-BASE DRAWN FOUNDATION.

IT has been unfavorable to test the new product. But judging from one colony we have been feeding, it would appear that drawn foundation with walls deeper than ⅛ inch will not give us as friable and delicate a comb as that which is ⅛ inch deep or less; that is to say, when the walls are deeper than ⅛ inch, the bees do not thin them down to walls of natural thickness. So far, tests go to show that drawn foundation having walls ⅛ inch deep, and with natural bases, is taken by the bees in preference to ordinary foundation, in every instance.

Perhaps some may think that a dollar a pound for foundation is rather expensive. So it is, but it is in the experimental stage. Even at a dollar a pound it is not too expensive to use as starters one inch deep top and bottom; that is to say, it costs no more than ordinary foundation in full sheets, and I am of the opinion it will be better bait for the bees—far better. However, we solicit tests of it in full sheets so that we can determine whether it will be advisable to make larger dies whereby we can reduce the cost of drawn foundation so that it will be within the reach of bee-keepers.

SLANG IN BEE-JOURNALS

THE critic of the *Review*, Mr. R. L. Taylor, singles out some of the slang phrases that have appeared in GLEANINGS. For instance, he refers to the word *scrooch* where I speak of bees "scrooching down" to pass under an obstruction; to the word *sass*, where I in a friendly way say "I would rather sass Dr. Miller than any one else;" to the word *smoled* instead of *smiled;* to the word *snide* (I borrowed this from the *Am. Bee Jour.*) when referring to a commission house. I grant that I do, once in a great while, use some expressions that are not in the dictionary; but if I do so it is because they convey for me a certain shade of meaning that can not be imparted by any of the dignified, staid synonyms.

But, friend T., why single out GLEANINGS? How about the expression "hoopee" from the dignified editor of the *Bee-keepers' Review?* And how about another expression he uses in the last *Review*, wherein he says the Western people, referring to Omaha, will take care of us in "great shape"? and another expression that he used, wherein he said that bee-keepers were "on to" certain commission houses that were carrying on certain practices that are not entirely above reproach?

I am no advocate of the free use of slang; but there are times when, in a limited way, it seems to me it may be used without offense. Besides, we should not forget that the correct idiom of to-day was the slang of yesterday. The word "outsider" is as good a word as there is in our language; but it was made to meet a demand in 1841, when it was denounced as pure slang. The word "mugwump," formerly slang, is now recognized by the Standard Dictionary. The word *popocrat* is perhaps serving its probation. W. P. R. says slang is language in gestation — formed but not born. The expressions that I picked from the *Review* were very expressive, and they did not in the least jar on my sensibilities.

If some of my English is not as good as it might be, it is because all that I "write" for GLEANINGS is *dictated* to a stenographer, often amid frequent interruptions, and when I hardly know how to spare the time even to *talk* it off.

HONEY-DEW — ITS SOURCE.

ALONG in the early '80's, especially in 1882 and '84, honey-dew was a good deal more talked of than now. Indeed, it was causing trouble by spoiling otherwise first-class honey, and it was found to be, in many instances at least, a very unsuitable food for winter. Since 1885 we have seen very little of it. In fact, there have been almost no references to it in any of the bee-journals, and I have hardly seen or tasted any thing of it since. But this year, when the season has been an almost entire failure in most localities, the old familiar "bug juice," as the stuff was sometimes called, is being reported from various sections of the country. Several have sent us samples of their extracted honey, wanting to know what was the matter of it. Examination shows a small amount of honey-dew. White clover started out well, but later in the season the bees gathered some dark stuff, and this, when extracted with the white honey, made for them an inferior grade of extracted.

Over and over again samples of honey-dew (pure stuff) are sent, and we are asked what the "stuff" is. Sometimes the flavor is sickening, and the color almost black. Then, again, it is light in color, and rather pleasant to the taste. I fear there will be some extracted honeys this year that will be off in flavor, just because of a little mixture of honey-dew.

For the benefit of some of the later readers, perhaps it will be well to explain what honey-dew is. It is a secretion or excretion usually found on the leaves of trees; and in most cases it is the product of an insect. This saccharine matter sometimes dries on the leaves. After a light rain it is moistened, and then the bees will roar around the trees and tumble into the entrances as if they were working on basswood. If the storm continues the sticky stuff will be washed off the leaves, and the poor bees will be humming around for that which has suddenly disappeared; and then, my, oh my! how they will sting! just as if you and I were to blame!

This peculiar secretion is usually found on the leaves of maple-trees. In such cases it comes from the maple-bark louse. Sometimes it is present on the leaves of hickory, and then, again, on low-spreading bushes. Whether the insects deposit it or not, this peculiar kind of "dew" sometimes falls in the form of spray, and many and many a time the sidewalk under the trees will be marked or spotted with the "juice." Honey-dew was formerly supposed to be a real dew from heaven, hence its name; but it is now known that the greater part of it is the product (or, more properly speaking, perhaps, excreta) of insects. But there is a kind of honey-dew that is a secretion from certain fungi, and also the leaves of certain plants. That this is true is proven without doubt.

But perhaps some of you may say, "What am I going to do if I find some of the stuff in the brood-frames?" I would do nothing about it at all—just leave it there. Our knowledge of wintering has progressed so far since 1885 that I believe the majority of bee-keepers will be able to winter their bees on this food almost as successfully, perhaps, as on the best sugar syrup. Indeed, I am coming to believe that the food has less to do with successful wintering than we formerly supposed it had; for we have for years wintered our bees successfully on all sorts of stuff, even including the vile "bug juice," of which we had so much in our hives during the winter of 1884. The loss that year was only 5 per cent, and there were heavier losses that year, attributed to honey-dew, than any year since 1881.

CONTRACTION AND TWO-STORY COLONIES, AGAIN.

"OPEN confession is good for the soul," says the editor of the *Review*; "and," he adds, "I am going to admit that bee-keepers *have* practiced control of the brood-nest at the beginning of the harvest. The editor of GLEANINGS shows most conclusively by reference to articles right in the *Review* that such things have been done. . . . It is true, as Bro. Root says, that this kind of contraction has been abandoned, and has been abandoned so long and so thoroughly that I had really forgotten it."

In referring to what I have said in regard to the use of two or more eight-frame brood-nests when working for comb honey, that I had secured more honey from them than from a single eight-frame hive, he says:

> I do not doubt that: but to make the matter right he ought to get *twice as much*. Here is an eight-frame hive standing this side of the apple tree. On the other side is another eight-frame hive. Let them alone as they are; put on the supers, and we get 50 lbs. of surplus comb honey from each colony. Set one of these on top of the other, and if we do not get 100 lbs. we have lost.

The point is well taken, Bro. H.; but I had it in mind, though I am not sure I called attention to it. I will give one instance to show why I based my preference as I did. In the north row at our basswood yard, during the season of 1897, was a one-story eight-frame hive. This secured 25 lbs. of sealed honey, but no more. Just back of it was a two-story colony that filled one set of extracting-combs and one super of 28 sections. The last named produced somewhere about three times as much honey, but at the time I did not think it had more than twice as many bees. The first-mentioned colony swarmed, and then secured 25 lbs. of comb honey. The parent hive did almost nothing, doing hardly more than to fill its brood-chamber with brood and a little honey. The other colony did not swarm, and was wintered as a double-story colony, and this spring it was the best working stock, and by all odds the strongest, of any thing we had in the apiary, having wintered perfectly.

Now, I will be frank, and state that some colonies in the double-deckers did not do twice as well as some of the single-story stock. But the average of the double-deckers did better than the average of the singles. In the case of the two and three story colonies, we have only one cover and one bottom; but in the case of the one-stories we have one cover and one bottom for every brood-nest. But suppose a two-story colony produces only twice as much as a single story. We have eliminated in part the swarming propensity, and we have saved the expense of one cover and bottom, and the value of one queen. But, over against this, my friend Vernon Burt, who lives only about four miles north of us, is of your way of thinking, as you will see by our last issue.

AUTOMATIC NON-SWARMING APIARIES.

No, not exactly that, for there is no such thing as an absolutely non-swarming colony nor a non-swarming apiary; and there is no such thing as a colony nor apiary that will take care of itself without any help from the apiarist whatever; but in these days of low prices it behooves the bee-keeper to cut down the one item of labor as far as possible. In my advocacy of double-decker colonies I have had in mind something that would be as nearly automatic as possible, taking into consideration bee nature and man nature. Bro. Hutchinson, in previous column, thinks we have gained nothing if a two-story gathers no more honey than two one-stories. In the generality of cases I am firmly of the opinion that one double will give a greater amount of honey than two singles. But let us assume, for the sake of argrment, that the big colonies will do no better. They are not as subject to being robbed, are far less liable to starve in spring or fall; winter better, and are much less inclined to swarm. Now, if this is true it is plain they will require *less labor* in caring for them; and assuming, as at first, that they will secure no more honey than the two singles, we have expended a great deal less labor for a certain amount of honey, and saved the expense of one bottom-board and cover, and of one queen.

For several seasons past, our basswood apiary has been managed almost entirely by myself. If I had tried to take care of them on the single-story plan, I should have had to go down there nearly every day, and, worse than all, been present at that time of the day when swarms are liable to come forth or else lose quite a number. As it is, I go once a week or once a month during the season—sometimes twice a week; for I know that an apiary managed on the double-decker plan is very largely non-swarming. Why, I believe such a yard requires about one-half the labor of an apiary run on the other plan. One of the principal items in the cost of honey is *labor*. If we can cut down half of that item, or a large part of it, we have reduced a large part of the cost of producing honey. On the double-decker plan one man should take care of four or five apiaries, where it might hustle him to take care of two on the one-story plan.

This is an interesting question, and needs to be considered in connection with one's locality. I do not, therefore, claim that the running of double-deckers is the way for *all* localities; but I do feel that the average bee-keeper has been trying to get along with stocks that are too weak.

Mr. Burt agrees with me exactly on this point; but by feeding in the spring, *a la* Boardman, he thinks he can secure stocks strong enough for his purpose in a single eight-frame brood-nest.

OUR HOMES,

BY A. I. ROOT.

And be sure your sin will find you out.—NUM. 32 : 23.

Sin is folly, and our text explains *why* sin is folly. It is folly because, sooner or later, it is going to be found out. Oh ! why is it that humanity, with all the examples that are strewn before it at every turn, can not learn that it *pays* to be honest? Now, dear old friend, do not think that I mean to commence this tirade by taking it for granted that *I* am honest, and that all the rest, or the greater part of them, are dishonest, for it is not true. I can truthfully and honestly say, "Why in the world can *I* not learn through all the examples that are round about me, that dishonesty and deceit do not pay?" You ask if I really own up that I *am* dishonest? In one sense. There is a constant temptation running all through my life to keep things out of sight that do not look well—to keep on doing selfish things, and to try to cover them up or to make it appear that my motives were good ones instead of selfish ones. I do not believe, however, that these wrong things go on very long. The presence of the Holy Spirit I am praying for every day (and I hope I may say *feeling* every day), is constantly prompting me to repent and reform, and make good my shortcomings. The great difference between the Christian and the unbeliever is, in my opinion, this: The Christian is being constantly prompted to repent, and fight down these selfish tendencies. The unbeliever may be prompted to a certain extent in the same way by public opinion and things of a like nature; but he is not looking constantly to the great Father above, and asking him to reprove and rebuke him whenever he is going wrong. A beautiful passage in the 139th Psalm, verses 23 and 24, brings this with wonderful vividness before us :

> Search me, O God, and know my heart; try me, and know my thoughts; and see if there be any wicked way in me, and lead me in the way everlasting.

The matter alluded to in the above has been brought vividly to my mind at this season of the year, because, as usual, we have been obliged to decide what help we shall keep and what we shall let go. Our board of managers have consulted with the foremen of the different departments, and considered which ones we should keep. As a rule, the newer hands are expected to lie off and give place to the older ones; and, other things being equal, this is the rule; but where one of the new hands shows unusual proficiency, or, what is better still, a clean-cut, honest, and conscientious spirit, we often keep such and let the older ones go. In fact, there is something inexpressibly sad to me, when we are dismissing help in the fall of the year. It comes along in the line of the homely adage, "A new broom sweeps clean." With the younger ones we can make allowances. I remember one quite small boy who came to help us early in the spring, among the plants. He was so faithful, and did so well, and accomplished so much work in a short time, that I really felt proud of him; but after a few weeks he seemed to get tired of the monotony of setting plants, and did not accomplish as much as he did the first week. So I decided I would have to let him go, because he would be looking around to the right or to the left, seeing what somebody else was doing, and paying no attention, comparatively, to his own work. Finally the boy was wanted in one of the buildings. I told the foreman that the boy had much ability, but he seemed to get tired of his work after a little; but he concluded to try him. For about a week the boy did tiptop. In fact, he was better than some of the older boys. But his zeal seemed to decrease as before, until he was of but little use anywhere. Of course, I talked with him, and remonstrated, but the good effect was only temporary. Now, this case we can excuse, because it was only a boy; but I think that that boy's mother had better watch carefully, and see to it that this trait does not follow him through life.

As I have said, we can excuse such things in a child, and many children outgrow them. I know this, for some of the most faithful and capable men and women I have around me had this very fault when they were small. Do you know, friends, it has been a rare pleasure for me through all these years of "work and wages" to see boys and girls grow from childhood into manhood and womanhood, and while they grow physically to know that they have grown in grace and wisdom, and in the knowledge of the Lord? But, even though it is not a pleasant thing, I must go back.

I have seen those who seemed to be so sure *their* sins of this kind would not find them out that I have been obliged to let them go. Physicians have a list of diseases that are said to be, as a rule, incurable. Now, may God forbid that I should say that there are *sins* that are incurable; but sometimes I have been led to feel that it is almost that way. There are people who have been so habituated to cheating their employer that it seems almost as if they never *could* get over it. My first sad experience in this line happened so long ago that I think I can mention it without hurting anybody's feelings.

When I was in the jewelry business I had a sort of craze to manufacture gold and silver jewelry. I wanted to do this, because then I could give honest goods according to my notion. I applied to one of the down-east jewelry factories for a good man who could work solid gold and silver. Somewhat to my surprise they agreed to let me have a man who, they said, was capable, and the price he wanted was less than I expected. He proved to be all I wished, and I often wondered why his employers let him go. After he became pretty well acquainted, however, and settled down to a certain routine, I discovered why they were willing to let him go, and why he worked for low wages. First, he would get the daily paper under his bench, and, when no one was around, he would read the war news, getting 25 cents an hour for so doing.

He had things planned and arranged so he could slip his paper out of sight when anybody came around who might report. Finally I found out he was making work for himself at odd hours. By playing detective a little I was finally able to prove that he received pay for all the time he spent on work of his own. As he was a good sort of man, and had done me quite a favor by leaving his home in the East, I good-naturedly let these things pass. Finally he solicited work from other people at lower prices than my own, doing said work on the sly while he was drawing pay from *me*. I felt that something had to be done. But even then for a time I put it off; but when it came to appropriating gold and silver, as well as precious hours of my time, for these outside jobs, I told him I thought we could not give him employment any longer. There are several things I want to say right here in regard to cases of this kind. The first is, that investigating and proving charges like the above is, to my mind, the most wearing and exhausting work that any one ever did. If any one thing will break down a person's health, it is being obliged to follow up and prove things of this kind. Again, with a life-long experience I am not yet prepared to say that it is always the best way, to tell a man plainly and squarely that you have found him out. First, there is a difficulty in proving conclusively things that are clear enough in your own mind; and, finally, you make a man a life-long enemy by telling him the truth, whereas if you simply tell him you do not need him any longer you and he may be on tolerably friendly terms if you happen to be near each other. Sometimes, by the grace of God assisting you, you can tell a man faults of this kind in a way that will make him a better man; but it almost always requires a great amount of grace to say just enough, especially when you are provoked, and not say too much or exaggerate the state of affairs.

Dear friends, I started out in this Home Paper to-day to say something that would help you — at least a great part of you; and may God give me grace and wisdom to say it as the Holy Spirit shall direct.

This thing I have spoken about is wide-spread. Men and women are complaining because they are out of employment. Some of them say that they can not get work because they are "not in the ring." But when I hear such speeches I feel almost sure there is no "ring" about it. More people are out of work because they are not *conscientious* and *honest* than for any other reason. Yes, even *women* are dishonest. God knows how it pains my heart to say it. Even women, mothers of families, those whom we have a right to expect to be all that is good and pure, seem to have either never heard our little text at the head of this talk or else they have such an opinion of their own shrewdness that they think themselves exceptions, and that their peculiar "sins" will never "find them out." Let me say to such, you may *think* your employer does not know of the things you are concealing; but let me repeat with emphasis the words of our text, "Be *sure* your sin will find you out."

No doubt many people think us needlessly particular in our establishment. During these war times everybody wants to see a daily paper, and the newsboys are pushing them everywhere—that is, when they are allowed. We have forbidden the delivery of papers to our people while at work. I speak of this because I know how strong the temptation is to take "just a minute or two;" and if *one* does it, another will. We have also been obliged to forbid peddlers, book agents, and agents for every thing else, coming on to our premises. Now, if these agents were conscientious and honest, we might, perhaps, permit them to come in before or after working hours; but I have learned by sad experience that it is not best to do even this. Do you say we make a fuss about little things? My friend, this fuss is made for your own good. The person who keeps his mind and his hands busy on the work he is *employed* to do right along through the working hours may be worth 25 cts. an hour or more; but if he is stopping his work to notice every thing that is going on, to go over to his neighboring workmen to talk about things not pertaining to the business, he will be worth to his employer only 15 or 20 cts. an hour, or even less. Why, I have had men (and women too) in my employ who finally became so demoralized in this very way that I made up my mind that they hindered business more than they helped, and that we should get along better if we paid them their wages to have them stay at home and not come near us, and they *had* to stay at home finally without any wages at all. One reason why we have had such extreme cases is because we all dislike to make a fuss about things that look on the face of them to be small and unimportant and so we good-naturedly let the things pass until there has to be a sudden reform.

I want to say a word more about doing work for yourself when you have hired out to somebody else. If I wanted to get good pay in any establishment I would be very careful about small matters. If I wanted to write a letter in regard to my own affairs while in the employ of somebody else, I would speak to my employer about it, and take out the time it occupied, even if it did not take me more than five minutes. You may say this is a small matter; but small matters help to make up solid character. The man who is known to be scrupulously honest in details will very soon get to be trusted, and will get large pay accordingly. I can often measure a man's worth the first day he works. A boy may be excused for running to the clock every little while to see what time it is; but a grown-up man should be ashamed to do things of this kind. There are people who are constantly hunting up pretexts and excuses to leave their work and to go off after something. I have had men who always wanted a different tool from the one I gave them, and who would spend more time in going after a tool they pretended they wanted than it would have taken to finish the work with the tool they had.

In regard to the old adage, "A new broom sweeps clean," this ought to be exactly the other way when applied to reasonable beings. The man who has had charge of a certain line of business for several years has learned many crooks and turns. He has learned by long experience, and sometimes by *sad* experience, how to avoid mishaps. There are many departments where it really takes years to become proficient in all the details. The old hand at the business should be worth two or three times as much as a new hand. Now, this is all true; but it is too often the case that, instead of trying to keep up with the times, and improve still more in his vocation, he gets to shirking, and finally to cheating; and then the adage becomes true. The old broom must be replaced by a new one, not because the new one is any better, but because the old one absolutely will *not* do that which he knows very well how to do.

During the dull season of the year we have always been more or less annoyed by gossip during working hours. Now, this habit of gossiping with a fellow-workman is one of the diseases that I have learned to fear is incurable. One who is addicted to it will certainly get very small pay. Another thing, these sins always grow upon us. A person who succeeds in taking a few pennies out of the money-drawer without being discovered, will, in a few days, take more; and you all know where it ends. Our text tells it exactly. Now, the person who begins to work at something belonging to himself while his employer is away is exactly like the one who puts his hand into the money-drawer. His sin will grow upon him unless his employer's reproof (or the influence of the Holy Spirit) stops him in his career. The man who takes money out of the drawer is called a *thief;* but the man who takes a few minutes several times a day, and succeeds in skillfully concealing the fact from his employer, will keep on taking more and more. Yet such a person would blush to be called a thief. But what is the difference? If you are receiving 30 cents an hour for your work, and you succeed in getting in ten minutes for yourself without being discovered, you have taken a nickel from your employer. And what is the difference whether it be taken that way or from the money-drawer? You may suggest that we are oversuspicious; that a good many take out the time, or work at some other time enough to make it up. This is true. Before condemning a person he is generally watched for quite a period of time; and he is almost always greatly astonished to know that anybody has been watching him. Let me make a suggestion: If you take a little of your employer's time, and afterward work enough or more to make it up, be careful to speak of it to your employer, or, if in a large establishment, to the time-clerk, for he is very likely to be questioned in regard to this matter; and it will be worth a great deal to *you* for him to be able to say, "That is all right. This person spoke to me about it at the time." The Bible exhorts us to "shun even the appearance of evil," and good business common sense should teach us the same thing. Let all your acts be such that they will at any time bear investigation without embarrassment or quibbling.

I have said some pretty severe things in regard to humanity, and it has pained me to say them. Now let me say this: There are many boys and girls in my employ who are as honest as the day is long. Sometimes things have come up that seemed to reflect on these—I almost wanted to say "my jewels." Well, they *are* jewels indeed; and when anybody hints at any thing that is crooked or dishonest, or that even looks bad, you do not know how it rejoices my heart to say, "Why, that boy is as honest as the day is long. I will guarantee that, whatever the grievance is, if you will let me take hold of it I will bring out the facts showing that he is clear and straight as the light of day." Sometimes I can add, "He is in my Sunday-school class, and I know him through and through." Oh how I do delight to get hold of such boys! I rejoice to take them by the hand, and look them square in the eye. Whenever an opportunity occurs I like to introduce them to my friends, and speak an encouraging word in regard to them. As a general thing, such boys and girls are Christians. They belong to the Sunday-school, and, of late, generally to the Endeavor Society also, or some similar organization among the young people. I often predict that such boys and girls will fill high places of honor in time to come; and it delights my heart to say in after years, when I hear that some one of them is a college professor, or has gone to the missionary field, or is filling some other important post, "There, I *told* you so!"

Now, dear friends, whoever you may be, please believe I am right when I tell you that no one thing can contribute more toward getting better pay, no matter for whom you are working, than to keep in mind this little text—"Be sure your sin will find you out." And when old age comes on, and grim death calls, besides the better pay here in this world you will find eternal life beyond, amid the companionship for ever and ever of the good, the honest, and the pure in heart.

HEALTH NOTES

BY A.I.ROOT

ROBBING SICK PEOPLE; MEDICINES TO BE GIVEN FREE OF CHARGE.

In my work of investigation in regard to medicines free, now so universally advertised through nearly all of our home papers, I have met with a very unexpected aid through the columns of that grand home paper the *Rural New-Yorker*, in its issue of July 9 The *Rural* was describing the Craig colony at Sonyea, N. Y., for the benefit of epileptic patients. Permit me to say that it rejoiced my heart to know that there is such an institution in this country, recognizing the great need of an asylum specially for those unfortunate people. Let me give you a clipping from the middle of the article:

> The average number of inmates in the colony was 214. The treatment given them, while always under medical supervision, is moral and hygienic rather than medical. Fresh air and exercise, cheerful surroundings and careful diet, are the chief factors in the treatment given. Many of the patients, upon entering the colony, are found to be suffering from bromism, a condition resulting from continued and excessive use of bromide of potassium. The effect of this is pitiable, causing not only physical weakness, but also mental dullness that seems akin to idiocy. The bromide suppresses the fits, while destroying health of body and mind. No doubt the advertising quacks who assert that they cure fits resort to such means to support their claims. Of course the bromides are withdrawn at the colony, and the wholesome life substituted effects a wonderful change.

The above statement interested me, more especially because GLEANINGS, some six or seven three years ago, recommended bromide of potassium as a remedy for insomnia. Since then there have been several protests against advising people to depend on a drug to induce sleep. A few years ago a young man was employed in our establishment, who was afflicted with epilepsy. I had many talks with him in regard to the matter. Several times he got hold of a medicine that he was sure was going to cure him. At one time, through the aid of this treatment, he went as long as six weeks, if I am correct, without one of his "spells." The medicine was furnished by an institution in a neighboring city that I pronounced quacks from the way their circulars read. Of course, he paid them a good deal of his hard-earned money; and although the remedy did suppress for a time his peculiar trouble, his friends as well as myself began to fear that the powerful drug was doing him injury in other ways. It seems that the advertisers have the names of all epileptics, for he showed me the circulars he got from time to time, making great claims, and calling everybody quacks but themselves. Poor Albert! When off alone one day fishing in the river he was taken suddenly, and rolled off the bank into deep water, with no one near to help. Well, this State institution described by the *Rural* informs us of an alarming state of affairs as described in the clipping above. These venders of medicine, who doubtless furnish it at first free of charge, probably know what the result will be—"mental dullness that seems akin to idiocy." But yet in the face of this they push ahead. Little do they care whether they kill or cure.

Now, is it not time that our different States, or, better still, the United States as a whole, shut down on this business? By the way, I am going to send a copy of this to Commissioner Blackburn, just as soon as the printers get a proof. I would advise every reader of this, who has friends or relatives afflicted with epilepsy, to send for the *Rural* giving an account of the treatment. This treatment is what I have been so vehemently advocating for years past—*doctoring without medicine.* They attribute their success to the right sort of diet, lots of fresh air—in fact, outdoor life as much as possible, keeping the patients pleasantly employed where they will be safe from injury, and taking advantage of all rational means known to medical science at the present day for the alleviation and cure of human suffering. May God bless those who have the institution in charge.

ROBBING SICK PEOPLE—CHAPTER 2.

Somebody is sending me a paper called the *Christian*, published in Little Rock, Ark. Here is a sample of one of the editorials:

> It isn't anybody's business; but as I am not a hypocrite, and never do anything in secret, I will say that I get drunk when I feel like it: always pay for my drinks, and never think of going in at the back door.
>
> I thank God for whisky. It has been my true and faithful friend for twenty years.

After looking over several numbers of the paper, my impression is that the principal part of the editorials are written when the editor is drunk. Now, there is nothing particularly worthy of notice or comment in this; in fact, I should not have given the periodical a notice had it not been that this fellow is actually getting money for pretending to cure people who are sick. I think he must do it something on the principle of Christian Science. Just notice his audacity in the following:

> My terms for healing, which means the speaking of the Silent Word every day, are just the same as ever: from one to ten dollars a month, leaving each one to judge as to his own financial ability. Just as faithful treatments are given for one dollar as are given for ten dollars.
>
> You'd just as well send me the money, for I'm going to have it. My *thought* has gone out, and will not return unto me empty. Besides, this money is mine.

People do send money to such fellows, or else they would not have the wherewith to publish their papers; neither would they keep advertising unless somebody sent them money. A great part of the publication is filled with testimonials from people who claim to have been cured, but these testimonials have neither name nor address. I hope the sample I have given you above will be sufficient to discourage anybody who is thinking of sending away hard-earned money to get somebody to *pray* for him.

DO OUR SOLDIERS NEED BEER?

The brewers have been very busy, and their sympathies have been very strong to the effect that our soldiers, especially in tropical climates, ought to be supplied with beer to fortify them against contagious diseases. Gen. Miles, however, it seems, does not agree. See the following, which we clip from a recent number of the Chicago *Advance:*

> Gen. Miles, in an order to the army concerning matters of health, says: "The history of other armies has demonstrated that, in a hot climate, abstinence from the use of intoxicating drinks is essential to continued health and efficiency." If this is true the liquor-canteens ought to be summarily abolished. Let Gen. Miles secure this "essential" by peremptory orders.

It seems to me, friends, that, if America is going to have more to do than she ever did before with the affairs of the whole wide world, it is of the utmost importance that we set a good example before the rest of the world. If it has been settled for all time to come that intoxicants have no place on board of a man-of-war, why not let the same ruling be carried out on the land as well? It seems that, if any man in the world ought not to be allowed to get hold of a "gun" under any circumstances, it is the one who handles intoxicants. It rejoices my heart to see the stand that our dailies are taking for temperance; and if the rest of the world would follow them we could soon shout, with the Anti-saloon League, all the world round, "The saloon must go."

HIGH PRESSURE GARDENING

BY A. I. ROOT.

By the help of the barometer and Weather Bureau our wheat was got into the barn without getting a particle of wet on it; but the barn was literally crammed full. After the wheat was drawn in we went over the stubble with a mowing-machine, then raked it up with a horse-rake, and had six pretty good-sized loads of loose straw and wheat together. When the thrashing-machine got around to go to work, the barometer indicated rain. We got help from the factory to come out and push things; and by working late at night, and commencing very early in the morning, we just managed to get every thing cleaned up in good condition, and the machinery sent away just before a season of heavy thunder-showers. I tell you, the saving on that wheat crop alone has paid for a good many barometers. As we have not measured the ground the wheat grew on, we can not give the precise amount of wheat per acre; but it is somewhere between 25 and 30 bushels. But the quantity of straw was immense. There were 217 bushels of wheat, and one of the largest strawstacks I ever saw—that is, for a small farmer. As straw commands a very small price at present, and but little demand, I shall have plenty to give my strawberries such a mulching that I won't need to have muddy berries next year. Our thrashing-machine was one of the best up-to-date rigs, and there was but little wheat in the straw to bother in the way of weeds. And, by the way, I have long been wanting to try raising some extra nice seed potatoes under straw; so you see now is my chance.

We finished thrashing Saturday afternoon. The boys and men were pretty tired, and they went home a little early. But just as the last one had got out of sight Huber informed me that the

BLISTER POTATO-BUGS

were just getting on the Bovee potatoes in droves. I told him to wait till I could see if I could find a boy over at the factory who had not gone home. They were all gone. By the time I got back to where I left Huber he was gone too. He did not hear my last remarks, and had gone down to the river to take a bath, a mile or two away. I went out among the Bovee potatoes. There they were, hill after hill, just like broom-splints. It seemed incredible, for we had been around there certainly not much more than 24 hours before, and the potatoes were all right. When I saw them there was not a bug in sight, and, for that matter, there was hardly a leaf on the potatoes. I looked all around, but I could not see a bug; but there was a wide swath of clean potato-tops spreading off toward the southeast. The rascals were moving in an almost straight line. I followed along, feeling sure I should catch up with them. It was about six o'clock Saturday afternoon of an exceedingly busy week, and the help had all gone home. If that army of bugs was to be routed before Sunday it looked as if I should have to do it. I gave each hill a kick with my foot, not hard enough to hurt the potatoes, but hard enough to dislodge the bugs. Now, my feet are not very large, but they are very nimble when I am deeply interested, Peter Henderson once delivered an address on "gardening with the feet." Well, for about two hours I did some of the tallest gardening with my feet that I ever did in my life. The ground was so mellow that stamping on the bugs did not hurt them very much; but I noticed that, if I gave my toe a twist so as to grind them into the soil, they were pretty much disabled; and I kept stepping on them and giving them a twist with one foot, and then with the other. Pretty soon I began to get warm, and off went my coat and vest. As it was cloudy after the rain, I pretty soon discarded my hat also. It occurred to me once or twice that the neighbors might think I had gone crazy to see me dancing a hornpipe, or something like it, as I waltzed through the potato-vines. Well, I kept on till I got tired out. But there were more bugs ahead, and I could not afford to stop. Pretty soon I was agreeably surprised to find I was getting a "second wind," just as I do when riding a wheel. By the way, friends, I think one might get a second wind in almost any thing if his sympathies are sufficiently enlisted.

By the time it began to grow dark I had gone over every hill infested with bugs. Of course, a good many of them escaped me, and congregated on neighboring plants. You know I am talking about the old-fashioned potato-bugs, and not the Colorado beetle. We always call them "blister beetles" for short. I had been "acquainted" with them for over forty years, and knew pretty well how they operate. I expected the live ones that were left, and perhaps some of the cripples, would by morning be gathered in a cluster something like a swarm of bees. I once saw a lot of them on the corner of a corncrib, forming a cluster almost as large as a swarm of bees. They were destroyed by burning straw before a bug could take wing. Huber uses, in his electric work, a gasoline soldering-apparatus that will throw a powerful blaze a foot or more in any direction, up or down. By the time I had finished my "hornpipe in the potato-patch" Huber had got back from his swimming, and he got me his torch and showed me how to use it.

Next morning I was up at four o'clock, but the bugs had not clustered. They were evidently hungry, for they had cleaned off the foliage from quite a number of hills of potatoes that were untouched the night before. I stamped them some again, even if it *was* Sunday; but the rain soon put a stop to my work. I managed to kill a good many of them, however, by crushing them into the soft dirt; and we had such a heavy rain during the day that I hope they are there yet.

While I was at church a neighbor called to say that the bugs were just ruining my potatoes up in the swamp. I was agreeably surprised, however, when I got up there, to find they had stripped the tops in only one corner of the patch, and they were New Queens, almost ripe, so it did not matter very much. Now, after stripping that one corner, every bug had left, leaving about half an acre untouched. Right from the swamp garden they went, evidently over to my Bovees, fully forty rods distant. In going there they went in an almost straight line southeast; and when they struck the Bovees they marched right through them toward the southeast. When I stamped them into the dirt I commenced on the east side so as to chase them over out of the potato-patch. Why should these bugs persist in going in a certain direction? If I am correct, after they had got out of the patch they went away from the field, pushing ahead in their course, even though the greater part of the field they left was untouched. I wish our experiment stations would tell us more about these queer insects. But, oh my! don't they strip a potato-patch quick when there are enough of them to work to advantage? I have never succeeded in poisoning them with Paris green or any thing else; and this time I did not try any remedy except grinding them into the ground. I think they are especially bad this season, as I have heard of them several times in this vicinity. Can anybody tell a better way to manage them than the one I have named? When I was a boy folks used to drive them out of the patch with a bundle of whips, and I have known them to be made to fly away. But all that we have don't seem to fly "worth a cent."

MORE ABOUT THE BLISTER-BEETLES.

Later.—After we had conquered the bugs on the Bovees I made a tour of inspection all over our different patches. Down in the creek bottom, among my extra earlies, I found more bugs to the square inch than I ever before saw or heard of. When we disturbed them on a hill of potatoes the whole ground was literally a moving, living mass. I began to study up some quicker way—a way that would not take so much human muscle. A man was cultivating potatoes near by. We got an old phosphate-sack, and filled it half full of soil. Then we hitched the horse to the bag of dirt and dragged it between the rows. The soil was just right after the rain to pulverize, so that the bag made a clean smooth furrow with sides so steep and loose with the soft dirt, that the bugs, when they once got into the furrow, could not crawl out. They would just roll over and over, then when we drove them off from the hills they were down between the furrows rolling over each other on account of the loose dirt on the sides. The bag of dirt was not heavy enough to pulverize them sufficiently, so the driver stood on it. It made old Mike grunt some to pull it, but it demolished the bugs by the thousands. As the potatoes were almost ripe the bugs did not do much harm; and, in fact, I should not have cared so much about the bugs, only I did not want them to get over to a neighboring patch where some choice late potatoes were just coming up. We made the horse go up and down in the furrows as far as the bugs were working until I had made almost a clean job of it. Now, I want you to give me credit for having invented that bag of dirt. I thought of a log of wood, a sap-trough filled with stones, and some sort of cultivator to bury them deep; but I think the bag "takes the cake."

EARLY POTATOES.

Not only the bugs but the blight has struck the most of them. The first to go were the Red and White Bliss Triumph. And this corroborates what our Ohio Experiment Station said about the Triumphs being more susceptible to blight than other kinds. The Triumphs were affected first, and now nearly all of a dozen kinds have blackened foliage with the black shriveled leaves beaten off by the rain until one is puzzled sometimes to know whether it is blight or bugs that have stripped the branches. What potato, do you suppose, stands blight better than any others? Why, it is our old friend the New Queen. Vaughn's Extra Early comes next. The New Queen seems as bright and fresh as potatoes just coming up; but perhaps this is somewhat because it is rather later than the extra earlies. The potatoes are, however, almost as good-sized as any of them, unless it is the Bovee, which certainly has produced larger tubers up to the present time than any of the extra earlies. In fact, it has given us a very good yield already; but the vines are still growing as well as they can, with blight and bugs both to hinder.

THAT BIG POTATO THAT WAS PLANTED IN THE GREENHOUSE.

I do not think I shall succeed in getting 100 bushels from one potato in one year, as I talked about last October, for I made a balk of it to begin with. The soil in our greenhouse across the way has been there ever since the greenhouse was started, five or six years ago. We have added more old well-rotted stable manure every winter, but the beds have never been cleaned out and the contents renewed, even if old greenhouse men did tell me I would have trouble. You see, the soil over there is never frozen as outdoor ground is, and the result seems to be, for greenhouse work, that it gets full of fungus or something of that sort. We had a little trouble last winter. This winter we had one particular bed where neither lettuce, tomatoes, nor potatoes would grow at all. It was rich and in good order; watered by sub-irrigation; but strong thrifty plants, set out with the utmost care, would die right down. The seeds would sometimes start a little but soon die. Before winter we expect to clean out all the beds, and put in new soil. Well, my big potato was cut up into 48 or 50 pieces, and planted in this ground. I managed to secure half a peck of potatoes from the one planted, but they are mostly quite small. Then we had another trouble in getting them to sprout as potatoes do that are wintered in the cellar. They may start later on, as there is time yet to get a crop; but I do not think I shall get quite 100 bushels from one potato in one year.

FRUIT-TREE BORERS.

Of late there seems to be unusual interest in the matter; and, judging from our own orchard of a hundred or more trees, I think there *ought* to be. Three or four years ago I was wondering why so many of our fruit-trees seemed to be dying when they had good rich ground, cultivation, etc., but was greatly alarmed when I found there were from one to a dozen borers around the roots of almost every tree. Some of the trees were girdled, and there were holes made so that a slender wire could be pushed in, even beyond the heart of the tree. We dug them out, and have kept them out by hand work since then, using a slender wire and a sharp-pointed penknife. Others have had a like experience. Well, within the past year, and perhaps I might say within the past few months, there have been a great number of paints and washes recommended as sure death to the borers. Our experiment stations, however, have come in very opportunely, and warned us that many of these patent-right preparations are not only sure death to the borers, but sure death to the trees also. A wonderfully enticing circular came to hand a few days ago, urging everybody to act as agent for a new kind of tree-paint. I forwarded this to our good friends of the *Rural New-Yorker*, who have promptly exposed so many fakes along this line, and below is their reply:

Mr. A. I. Root:—I am sorry that I can not tell you any thing definite about the inclosed circular. I only know that so many of these so-called tree paints have been put on the market that I must say we fight very shy of them. Our best entomologists are very doubtful as to the real value of any such paint. When dendrolene was introduced last year we all thought we had a very good thing; but it killed so many young trees that now no one thinks of using it at all; but we are promptly receiving recipes of home-made tree-paints or mixtures, and they have been used by our readers with good results, and probably one of the best is the inclosed. I think it likely that this home-made mixture will give you about as good results as any of the so-called tree-paints which are advertised for sale; and, for my part, I would not use any of the latter until advised to do so by our State entomologist.

New York, July 21. H. W. Collingwood,
Managing Editor.

The following is the recipe alluded to by Mr. Collingwood:

A PAINT FOR PEACH-TREES.

I have for several years past used the following wash: Slake lime to the consistency of good mixed paint, and, to each pailful of about two gallons, add one quart of raw linseed oil, which will thoroughly mix by a few minutes' stirring. With this, paint the trees where there is danger of borers entering. For applying I use a painters' round dust-brush. I generally apply the paint about June 1, and it will remain a perfect coating until heavy rains in October or November. I always examine the trees for borers before applying; but in 1896 less than half a dozen borers were found, and they had done no harm. In 1897 only two borers were found, and they had not done any harm. My orchard contains nearly 500 peach-trees. I formerly used washes made with soap, ashes, potash, etc., but the trouble was they would not adhere long enough to protect through the season. This wash will, and will wash off during winter, leaving the bark smooth.

The name of the writer is not given in the above; but I presume the same preparation will be all right for apple and other trees as well as for peach. I feel so certain this paint can not do any harm to the trees that I think our friends may all apply it at once, without fear; and it probably is just as cheap as or a great deal cheaper than the patent-medicine preparations that you have got to send away off for.

EVERBEARING STRAWBERRIES.

Quite a number of these have been brought forward, but none of them have proved to be much of a success — that is, in the Eastern States. But when we say this we must bear in mind that strawberries *are* grown in the East in the fall, and put on the markets and sold at good prices; but so far they seem to be from well-known sorts, and the fall crop seems to be the result of conditions rather than varieties. The Jessie, where it grows with thrift and vigor, will frequently bear quite a lot of nice fruit in the fall from new runners that started early. Last season the Louis Gautier was advertised quite extensively as a second-crop berry. We did not succeed, however, in getting any last season, but I rather think now it was owing to faulty management. At present writing, July 25, I am happy to say that our young plants of the Louis Gautier are budding and blossoming quite freely, and we have quite a few green berries of fair size But it is still a question of rain or irrigation. I am rejoiced to say that the plant certainly has a remarkable tendency to put out blossoms and fruit as soon as the new plants are sufficiently established.

APPLYING MANURE WHERE YOU WANT TO GROW THRIFTY PLANTS.

On that plat worked on the hill system I have said so much about, we applied at one side some old well-rotted manure quite liberally. This was done, I think, some time in May. It had the effect of making larger and nicer fruit, as I expected it would, and now it shows such a marked improvement in the way of getting strong thrifty plants that we are hauling more manure and depositing it along close to the berries on the up-hill side. We place it thus, because, if there should be a heavy rain, the strength of the manure is washed down on the strawberries and on the land. For this purpose you want old black well-composted manure. This is not so apt to contain weed-seeds, and it seems to hit the right spot the very first rain that comes. At first you may think the bed looks very unsightly; that those great heavy clods will never get worked down. But just keep working them up with a hoe after a heavy rain, and you can soon have your bed nice and smooth again. And then what fun it is to see the great strong thrifty green leaves, when, without the manure, your bed would look dry and shriveled up! The demand for plants is really spoiling my plan of growing strawberries in hills — that is, so far as cutting off all runners is concerned. Sending off all plants promptly the very day the order is received, and at the same time sending good strong ones, is about the best way of advertising strawberry-plants I ever heard of, especially if you are able to supply good strong thrifty plants all through the months of July and August. If your plot for plant-raising is near the road where people can see them as they go by, you can build up quite a local trade. But to do it right takes lots of work and lots of manure.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00; tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

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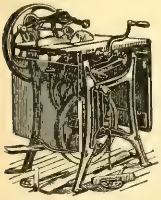

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32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

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Special Offer. For the next 90 days, we will sell warranted purely mated Italian queens at 50 cts. each; ½ doz., $2.50; tested, 60 cts. each; ½ doz., $3.00. Safe arrival guaranteed. 15 years' experience in queen-rearing.

LEININGER BROS., Fort Jennings, Ohio.

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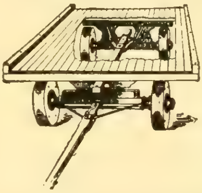
QUEENS. Untested, 70 cents; 3 for $2 00; after July 1st, 50 cents each. Tested queens, $1.00 each. Best Italian stock. Satisfaction guaranteed by return mail.

Theodore Bender, Canton, Ohio.



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Dollar Eggs? Yes, after June 1st we will sell all eggs at half price, $1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmas, Langshans, White Wyandottes, Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

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SPECIAL NOTICES BY BUSINESS MANAGER

SIX-INCH FOUNDATION-MILL IN CANADA.

We have for sale at St. Thomas, Ont., a six-inch thin-super-foundation-mill which we offer, freight and duty paid, f. o. b., at that point, for $20.00. It will make nice foundation 10 to 11 feet to the pound. It was sent by mistake for an extra-thin machine. Another had to be sent, hence we have this one to dispose of. Will mail sample to any one interested, if desired.

HONEY, COMB AND EXTRACTED.

We should be pleased to hear from those whose honey crop has not been sufficient to supply the home demand. We are in position to furnish you with a choice article of comb or extracted at reasonable rates. Have already received a shipment of fancy comb in plain sections, and have other lots of honey on the way, both comb and extracted. Prices sent on application. Don't overlook our honey-leaflet as a means of working up a demand for honey. They pay well.

HONEY PROSPECTS.

About the time our last issue went to press, offers of honey began to come in, and they have been coming quite freely since. These offers and reports have been coming from different sections of the country; and, judging from these reports, we still believe that, unless there is a large fall flow, there will be considerably less honey to put upon the market this year than last, although the prospect for a crop in many localities is much better than it was. In some quite large areas the crop will be much better than it was last year in the same places, while in other areas, much larger, the yield is away behind last year, or wanting entirely. The large yields this year are several degrees farther north than the best yields of last season, so that the northern New England States, Northern Michigan, Wisconsin, and Minnesota are, as a whole, much better off this year than last, while through Ohio, Indiana, Illinois, and Missouri the honey yield, so far as reported, is very small compared with last season.

Special Notices by A. I. Root.

SEEDS OF THE PAPAYA (OR MELON) TREE.

Thanks to our Bermuda friends, we have now a good supply of seeds of this tropical plant, and we are still ready to send a few of them to any one who wants to try them, on receipt of a prepaid directed envelope. Please remember this is a tropical tree, and would have to be treated as you would treat an oleander, lemon, or orange tree. It is, however, of very rapid growth, and ought to grow several feet in a single season. I would suggest that the care and culture should be about the same as for the tomato. You all know how to grow tomatoes. Protect your papayas from the frost just as you would the tomato-plant, and you are all right.

STRAWBERRY-PLANTS READY TO SEND OUT DURING AUGUST.

Jessie, Rio, Sharpless, Warfield, Bubach, and Haverland, all old standard varieties, will be furnished for 15 cts. for 10, or 75 cts. per 100. If wanted by mail, add 5 cts. for 10 or 25 cts. for 100, for postage. The first three are perfect, the last three imperfect. Of the newer varieties we can furnish Marshall, Brandywine, and Wm. Belt at 20 cts. for 10 or $1.50 per 100. Any of the above potted in jadoo, at double above prices. Darling, Carrie, Earliest, and Margaret, will be furnished potted in jadoo fiber (postage paid), at 10 cts. each or 85 cts. for 10. Owing to the demand for the Nick Ohmer we can make no better figure than before—25 cts. each or $2.00 for 10. We have reduced the price on the Darling because neither that nor the Earliest has proved to be productive in two seasons' trial. As they are both perfect they will be just the thing for fertilizing varieties of the imperfect kinds. By the way, I wish those who received premium plants last fall, of Darling and Earliest, would send us postal card reports in regard to their productiveness. They are among the earliest varieties known, but they are small, and few in number. The Rio is not so early, but with us it is much ahead of these two in both respects.

CONVENTION NOTICE.

The annual meeting of the Northern Illinois Bee-keepers' Association will be held at the court-house in Freeport, Ill., on Tuesday and Wednesday, August 16 and 17, 1898. All interested in bees are invited to attend.

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I should have no difficulty whatever in getting twice 1000 new subscribers this year, if all of the bee-keepers in this country had read the Review the past year. I have sometimes thought that it might pay a publisher to give away his journal one year, simply for the sake of getting it into new hands. There are, of course, decided objections to such a course; but I am going to come as near to it as I dare. Here is my offer:

If you are not a subscriber to the Review, send me $1.00, and I will send you twelve back numbers, the Review the rest of this year and all of next year.

Each issue of the Review, especially if devoted to the discussion of some special topic, is really a pamphlet containing the best thoughts and experience of the best men upon the topic under discussion. Twelve back numbers of the Review are, to a certain extent, so many little books devoted to as many different phases of bee keeping. Some issues of the Review are now out of print; of others only a few are left; while of others there are several hundred. Of course, I shall send those of which I have the most, but no two alike.

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Honey Column.

CITY MARKETS.

MILWAUKEE.—This market for honey continues in very good order. There are some arrivals of new crop of extracted this week which shows very good flavor although some seems to have been extracted a little too soon. We like to have it well ripened. The demand is moderate. We quote fancy one pound comb, 11@12; A No. 1, 10@11; No. 1, 9@10; amber, 7@8; old, 5@6; extracted, white, in barrels or kegs, 5@6; dark, 4@5. Beeswax, 25@26.

A. V. BISHOP & Co.,
Aug. 5. Milwaukee, Wis.

BOSTON.—No change in prices since our last quotation, and practically no call during the warm weather. Beeswax wanted, with very little stock on hand. Price, 30@32.

July 27. BLAKE, SCOTT & LEE, Boston, Mass.

BUFFALO.—New honey commencing to come in and selling one-pound sections, pure white clover, at 11½ @12½. Extracted, in pound tumblers, 90c to $1.00 per doz. Sales will be slow for two or three weeks.

Aug. 6. W. C. TOWNSEND, Buffalo, N. Y.

CLEVELAND.—We quote our honey market as follows: New crop, fancy white, 13@14; No. 1 white, 12@13; fancy amber, 10@11; No. 1 amber, 9@10; buckwheat, 8@9. Extracted, white, 7; amber, 6. The supply of new honey is very light, demand good, and old honey moving slowly. A. B. WILLIAMS & Co.,
Aug. 9. 80-82 Broadway, Cleveland, Ohio.

CHICAGO.—Some shipments of the new comb are coming forward, and where white in good order sells at 12 cents. Extracted is very steady at unchanged prices, with fair arrivals. Beeswax steady at 27 cts.

R. A. BURNETT & Co.,
Aug. 9. 163 South Water St., Chicago, Ill.

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P. O. M. O. office, Lavaca, Ark.

QUEENS. Untested, 3 or 5 banded, 50 cts. each; 6 for $2.65, or $5.00 per dozen. Have had thirty years' experience with bees, and know how to rear the best of queens, and have as good strain of bees as can be procured in this country, and make a specialty of rearing queens; have 700; can send by return mail. This is a money-order postoffice. **Daniel Wurth,**
Falmouth, Rush Co., Ind.
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Tested, 75c; " $2.00.

Imported Italian mothers only are used, and for industry, gentleness, and beauty their bees are unsurpassed. We have in our yards bushels of drones from imported mothers and their daughters, and a mismated queen is rare. No defective queens sent out. Remember that we are in the far South, and can send queens by return mail. Safe delivery. Money-order office, Decatur.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

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STRAY STRAWS FROM DR. C. C. MILLER

CRITIC TAYLOR seems to think I'm wasting time and energy on "bait sections." Lots of good company in that direction, Bro. Taylor.

THE EDITOR of the *American Bee Journal* does his full share to help the honey market. I've just had the pleasure of a two-days' visit from him, and I think he ate honey at every meal.

"TAKING THE UNITED STATES through, 50 lbs. per year to a colony, on an average, among the bee-keeping specialists, is about what they secure," says Doolittle, page 583. Does that mean comb or extracted? If comb, it's a good bit too high for this "locality."

YOU ARE RIGHT, Mr. Editor, p. 574, in assuming that the larva R. Wilkin talks about with its big feast was "nothing more nor less than the milk with a common worker grub." The only point I wanted to call attention to was that, as the grub was only a day and a half old, its food was the same as the royal jelly.

HONEY SEASON a dead failure here. That knocked endwise all experimenting with plain sections, drawn foundation, and other things. [Too bad, doctor. I really wish you could try these things. Can't you scrape up a honey-flow in the fall? Let's see. Last year you made $5.00 a day from your bees—yourself and assistant. I suppose this year of total failure would split this rate square in two. —ED.]

REIDENBACH, according to *Nœrdlinger Bztg.*, has, since 1893, practiced transferring eggs into queen-cell cups, using as a tool a needle somewhat curved at the point. But is there any advantage in using eggs? A larva can as easily be transferred, and will mature sooner. Until it is three days old it ought to be perfectly good for a royal larva, there being no difference between the food of its first three days and the royal jelly.

R. L. TAYLOR, the *Review* critic, doesn't like the way the editor of GLEANINGS talks when in playful mood. A good many like it. I rather like to say "sass" and some other things playfully, but I wouldn't go so far as to use the word "don't" as Mr. Taylor does when he says "It don't lose its sweetness" (*Review*, 216). [I do not know but it is wicked, but somehow I can not help thinking of the glass house and the stone-pile. Bro. Taylor will have to be very careful how he uses the Queen's English hereafter.—ED.]

C. J. H. GRAVENHORST, the much-esteemed editor of *Deutsche Illustrierte Bienenzeitung*, has been very sick since the beginning of the year, and is still confined to his bed. Although past his threescore years and ten, he is a man of remarkable vigor, and it is to be hoped that he may be yet spared long years for the benefit of bee culture in Germany and throughout the world. [Friend Gravenhorst, despite his age, seems to me to be one of the most progressive bee-keepers in Germany. All that he has written on the subject of bees, so far as I know, seems to sparkle from the fountain of eternal youth.—ED.]

YOUR OBSERVATION as to bees first taking food into the chyle-stomach before filling the honey-sac, you think does not agree with that of Reidenbach, Mr. Editor, p. 574. Begging your pardon, I think you are in entire agreement. He killed the bees "as soon as they had taken *a little*." Their first care was to take what they wanted into their chyle-stomachs for their own use, and as soon as that small quantity was supplied they'd go to filling their honey-sacs. You "killed scores of the bees just *as they came from the berries*," and of course by that time they had taken all they needed for themselves, and a surplus besides. See? [Yep!—ED.]

I'M DELIGHTED to see that the editor is beginning to consider how a glossometer can be cheaply made. Once he gets started on that line, he'll not stop till we have a good serviceable affair at a low price. I'd like to have at least a dozen in use at once. Why can't Mr. Rankin tell us what he uses, and how many he has had in use? [While I can not feel very enthusiastic over a glossometer, yet if the doctor will prod hard enough we will see what we can do. But, say (the doctor need not listen now), he has sent a diagram and a scheme for a glossometer, the best of any thing I have seen so far. I will try to show you a picture of it in an early issue of GLEANINGS. —ED.]

THE *Review* critic refers to GLEANINGS, p. 422, and says: "Of Ranson's plan of 'baiting,' the doctor says: 'It will probably work all right with enough baits, providing colonies are not equal in strength.' Will he explain why it would not be better to have the colonies all equally strong if there are enough baits?" I may say in reply that I didn't say it wouldn't be better. But in that case Ranson's plan couldn't possibly work. The special feature of his plan is to take the super from a colony that has begun work, and give it to one ready to begin work. If all were equally strong they would all need baits at the same time; then how could he take from one and give to another?

TO HAVE BEST SUCCESS with bottom starters, it seems important to have the top starter come down within less than ¼ inch of the bottom starter. Then the bees seem to tack the two together about the first thing. If there's much space between them, the bottom starter topples over sometimes before it's fastened to the upper one, and sometimes they dig away the lower one, apparently to help out the other. [Ah! that explains. I have had trouble with the bottom starters toppling over. Then I thought I made my mistake in having them too wide. It would now appear that the trouble was not because the bottom starter was ½ inch, but because the space between the two starters was more than ¼ inch. Say, doctor, why didn't you give us this kink before?—ED.]

THAT IDEA of having a section filled clear out to sides and bottom to get it best filled is doubtless all straight. The English Simmins uses a section split on top and two sides, the split being a V groove, so the split doesn't show in the finished section. That allows the section to be easily filled entirely full. [Yes, indeed, English bee-keepers have various styles of sections — some that are split clear around. The idea seems to be to have foundation held securely to sides, top, and bottom. I think there can be no question but that better filling is secured when the sheets touch the section *all around*. But Mr. Danzenbaker uses ordinary sections, a starter at top and bottom, but said starters are wide enough to reach clear out to the sides. If they do not quite reach, he will not have them. It is possible that herein lies the secret of the success of having sections without corner holes. —ED.]

"THE HIGHEST chemical authority at the Michigan State Agricultural College says they are identical—beet sugar *is* cane sugar."—R. L. Taylor, in *Review*. But does chemical identity prove identity in all respects? Authorities across the water, including so well-informed a man as T. W. Cowan, say that beet sugar is *not* cane sugar for wintering bees. [We know that charcoal and the diamond are chemically the same; but there is, nevertheless, a vast difference between the two. While I have never been able to discover any difference in taste or appearance between cane and beet sugar, there may, nevertheless, be a difference. Years ago when we had nothing but cane sugar we did not winter our bees as well as we do now when we are supposed to have nothing but beet sugar. But this is not saying that the cane sugar was the cause of the loss. Indeed, I do not believe it had any thing to do with it. Mr. Cowan is a man for whose opinion I have great respect, and I know he recommends, for English bee-keepers at least, cane sugar and not beet sugar.—ED.]

THE THOUGHT of the editor, p. 588, is that when hives are hoisted on four blocks the bees' flight will be obstructed when working over them or when walking through the apiary. Evidently the thought at the bottom of that is that the bees fly out and in at all parts. One would naturally think so. The fact is, my bees fly almost entirely in the same direction they would if not blocked up. They can use the back or side, but the simple fact is they don't. If the hive were open all around in early spring, the case would be different. But he's all right about the queen. While most of the swarm comes out in front, the queen's just as likely to come out elsewhere. [I never tried hives raised up on four blocks; and that bees would fly out from all four sides was only my theory; but the more I think of it, the more I can see that they would go out just the way they were in the habit of doing before the hive was raised. But after the young bees have begun to hatch I should suspect that they would fly out as readily toward one point of the compass as another. Or is it true that, like a flock of sheep, they will follow their leaders?—ED.]

R. C. AIKIN thinks great stress can't be laid upon retaining bees to build comb that would otherwise go afield, p. 575. Not so sure about that, friend Aikin. Don't bees vary their work according to the demands? Bees don't gather pollen till 16 days old, but I've seen them bringing in pollen when five days old when there was no one else to do it. I believe bees will always be busy when there's any thing to do; and any thing that takes off work to be done in the hive means more work done in the field. [Let's see. We had quite a series of articles going to show that worker-bees of various ages would perform all sorts of work—that is, old bees would rear brood, and do general nurse-bee work; and young bees, when there were none others in the hive, and as soon as they could fly, would go to the fields. Under ordinary circumstances there is a sort of division of labor in the political economy of the hive. The old bees do the field work, and the young bees the nurse work, unless some stress of circumstances causes them to do otherwise. It was the veteran E. France who, three or four years ago, made some quite elaborate experiments, the results of which were as given above.—ED.]

JULY 28 I started robbing by giving a sixth story with a little honey, letting the robbers get a taste. They worked at it fiercely all day in great clumps, trying to get in, many robbers being slaughtered. Nothing remarkable about that, and I'm not proud of it, but I mention it to say that not another case of robbing occurred in the apiary, although there were 73 hives hoisted $\frac{13}{16}$ inch on four blocks, others with a 12x2 entrance, and some nuclei with ordinary entrance. [If I understand you, doctor, you have had no trouble from robbing in any case where hives have been raised up on four blocks. But the case of robbing you did have was due to the fact that you let the bees clean out supers containing a little honey. I dare say that a good many of the friends who have purchased hives with deep entrances this year thought it would be necessary, after the honey season, to contract this entrance down. Even our apiarist, Mr. Wardell, had somehow got this notion into his head. He had contracted some of the deep entrances. I told him to pull off the blocks and let the robbers have full swing; but so far not one of these hives has been attacked. I would not, however, go so far as to say that such deep entrances would be advisable in case of nuclei.—ED.]

CALIFORNIA ECHOES

BY J. H. MARTIN.

The other day when Mr. Levering was washing dishes and I was wiping them (you see we are baching together), said he, "Do you know where the term 'Old Reliable' originated, as applied to the *American Bee Journal?*"

"No, I have not the least idea," said I.

"Well," said he, "when I lived back in Missouri there was a stage-driver whose arrival was as regular as the rising of the sun, and seemingly the most violent storms would not interfere with his regularity, and he became noted far and near as the 'old reliable.' When I edited the bee department in the Los Angeles *Herald* the *American Bee Journal* came to the office so regularly that I was reminded of the old stage-driver, and noted the fact, and in the next issue inserted an item calling it the "Old Reliable." Soon after I saw it copied, and from that time to this it has borne that name. Now, some one else may have suggested the same name, but nevertheless the term applied was original with me."

Mr. C. A. Hatch is now in Colorado, engineering an apiary, and hobnobbing with R. C. Aikin and others. Mr. Hatch should not have been discouraged at the failure of the honey crop in Southern California, for there are many places where the bees will roll in quite a honey crop, even in California. Here am I, where the alfalfa is yielding honey quite rapidly, and the conditions are so nice the ranchers believe it makes better hay to stand a while in bloom, and that is just pleasing to the bee-men.

Did you ever have wax and honey stick to the soles of your shoes while extracting, or working where there are scraps on the floor? It is really uncomfortable to have a wad accumulate on the heel or sole, and then it is a vexatious operation to dig it off. I find that a rubber sole greatly mitigates the nuisance. If you do not wish to wear rubbers, peg a rubber sole to your shoes.

Allow me to thank Mr. Theilman for that plan for leveling drawn comb in sections with a common honey-knife. It works like a charm. As I have several hundred to operate upon, that item was valuable to me. I would make the additional suggestion that the knife works well when cold, when the comb is cold and brittle; but if the day and the comb are warm, you also want a hot knife, and that is where a knife-heater comes in handy.

Noting what you have to say about producing comb honey without separators leads me to remember seeing a fine lot of comb honey in Riverside, Cal., that was produced without separators, and there were but a few of the sections that would not pack nicely in the case. Of course, the few bulged sections were just what were wanted for home use. This honey was produced by Mr. George K. Hubbard, and in the Hubbard hive. He says he has no use for separators.

Mr. Editor, that Echo about a certain lot of honey handled by the Exchange seems to be troubling the minds of a few of the directors. I wish to say, in reference to it, that, in echoing the matter, I had no idea of injuring the Exchange. I have no objection to the publication of the letter sent you by the present secretary of the Exchange or by anybody else. I beg the editor's pardon for getting him into the trouble, and agree to hold a clam silence upon such a sensitive subject hereafter. Now, whatever you publish I shall pay no attention to it, for I am now in the midst of a very good honey-flow, 750 miles north of the Exchange, and 2642 feet above it.

[Regarding the last Echo, I would state, for the information of our readers, that, along the last of April, I received an article in reply to a California Echo that appeared in our issue for Feb. 15, referring to the specific gravity and quality of honey that was sold by the Exchange. I thought the matter hardly of sufficient *general* importance to bring it up again. At all events I sent the article to Mr. Martin, and asked him if he cared to reply. He stated that he did not wish to take any space, but had no objection to the publication of the article. After some correspondence with Mr. Clayton the matter was dropped; but it has been resurrected again by the Echo above, and I now give the article that was sent in the first place.

The sample of honey in question was sent us as stated, and I do not wonder that it was by some considered sour. When we came to know its real history it is easy to understand that the acid flavor might be due to the citrus bloom. That it should be necessary to refer to the specific gravity of honey in pounds and *ounces*, I do not believe.—ED.]

THAT SOUR HONEY.

An Explanation.

BY C. H. CLAYTON.

Mr. Editor: — Referring to Mr. Martin's California Echoes in GLEANINGS for April 15, wherein he speaks of a certain lot of honey weighing between 11 and 12 lbs. to the gallon, and being pronounced sour by "nearly every bee-keeper," I wish to say that this lot of honey was graded in the week between Dec. 25 and Jan. 1; was weighed in the five-gallon can, sometimes two cans on the scales at once, and probably *did* weigh somewhere between 11 and 12 lbs. to the gallon; but where between? Some of the cans were fuller than others; and when the cans were weighed singly they ranged from 57 to 62 lbs., allowing 2½ lbs. for the weight of tins; so the 11 to 12 pounds per gallon is very indefinite. To be of value as bearing on the condition of the honey, the record should be accurate.

None of this honey was sold until well along in January, long after Mr. Martin's employment by the Exchange had ended. There were 98 cases in the lot — 53 white, the rest light and amber.

About the middle of January I received a trial order for one or two cases of white, "candied preferred." This was the only lot of white we handled during the season, that granulated, so I sent some of it, explaining matters to the buyer. The purchaser wrote me it was the finest honey he ever had, and doubled his order, and kept sending orders for it until he had taken the whole 53 cases of white and about 50 of amber and light amber, building up a trade that has taken about six tons in three months, in a town of 8000 inhabitants.

Now, I have on my desk before me, as I write, that identical sample bottle about half full yet, from which those tastes and smells were taken, and it is granulated nearly solid — not a sign of that watery, "bubbly" condition we are accustomed to associate with fermented honey. Will sour honey granulate? I ask for information. I don't know.

For my part I think some dealers and some consumers may know nearly as much about the quality of honey as the average bee-keeper. Our honey is sold under a guarantee; and if there had been any thing wrong with it we should have heard something drop. One party, who at first pronounced it fermented, was given a taste of it a few days later, and fancied he detected a "mild orange flavor," "modified, perhaps, by a touch of lemon." He had been told *where* it was produced. I firmly believe I could, by suggestion, get a dozen different flavors assigned to that little bottle of honey; but it seems reasonable, in view of the sound condition of the honey to-day, nearly a year after extracting, to conclude that the peculiar flavor of the honey is due to citrus bloom; and this should teach us to be careful lest we announce a positive opinion founded on incomplete or no knowledge.

I will mail you a small vial of the honey tomorrow if I can dig it out of the bottle.

Los Angeles, Cal.

Ridge-Pole
Musings

MARKETING.

Why Honey Should be Sold at Home rather than Shipped Away; The Competition between Sugar and Honey; Selling Extracted in Preference to Comb.

BY R. C. AIKIN.

Which shall I produce, comb or extracted? One should have some settled policy or plan, and work to that, to attain the best results. I do not write this for those who are bee-keepers just for the pleasure or recreation they may get out of it, but for those who desire to do that which will serve best to make a living.

Comb-honey production is my choice from the standpoint of taste or inclination, yet I am turning my attention more largely to extracted, and I will tell you why. I live in a little city of less than 2000 population, surrounded by a farming community. We have no factories or public works, nor people who are wealthy, retired merchants, or those living on the income of a fortune, but people who are striving for a living. The farming population is not wealthy. Both in the town and country the population is strictly of those who are not capitalists, but of that class who *must* work and *economize* to sustain their business and obtain therefrom their living, hence buy *few* luxuries. In more well to-do and old-established communities markets are better for all kinds of produce, and a cash basis of doing business obtains that is not found in such a community as this. Loveland and vicinity is less than 20 years old as a business community. We hardly think of selling honey, butter, eggs, and such products, for cash at the stores — can not do it, for they *won't pay cash*. Cattle, wheat, and potatoes, where grown in large quantities, do bring cash; but the lesser products can be marketed only by trading and trafficking. I do not mean that no one pays cash for honey, for people buy of me and pay cash as they would at a store, but there is no wholesale market where cash can be realized as on grain or stock.

This being the case in my locality — and similar conditions prevail in many places — I am forced to take my choice, as it were, of two or more evils. If I ship to the city markets I have left but a small price when freights and commissions are out. The quotations the past year on extracted honey have not averaged over 6 cents, as quoted in the journals (I make this statement without referring to the journals on file, and I think I should be safe in putting it one cent lower yet; but at 6 cts. I have not the least fear of being caught with the figure too high should any one undertake to compile from the printed records), and comb about 10 or 11. At these prices I can get *about* 5 cents out of extracted if sent to Denver, and 4 cents or less if sent to Chicago. In like manner comb honey would net me about 6 to 8 cents.

I go to my grocer and find sugar of best quality selling at about 6 cts. Syrups sell for almost any price from 2 cts. per pound up to about the cost of sugar.

Now let me ask, is it business, is it policy, is it justice to all concerned? is it *common sense* that I send my honey into the general markets to compete with the products of all other shipping apiarists, and get from 4 to 6 cts. for extracted and 6 to 8 for comb, while the sugar and glucose factories are sending their sweets right in here and selling them to the people whom I ought to supply with a wholesome sweet. Understand, my home customers are a people who can not spend money lavishly, and have what they most want and prefer, regardless of cost, but must calculate what will supply their tables reasonably well at a minimum cost. They *do* calculate the cost, and furnish their tables just as I and all poor honey-producers do and would do if in their places. Friends, come right home and ask yourself, "If *I* were not producing honey, and had to buy sweets, which would I use — 6-cent granulated sugar or 8 to 10 cent honey? Ninety-nine times out of every hundred you would take the sugar.

I had numerous calls for quotations on comb and extracted the past winter, and I quoted 6 cts. for extracted and 10 for comb, *net weight.* For the extracted I asked 6 cts. for just whatever was in the can, then added the cost of a can. A 60-pound can holds about 58 pounds. At 6 cts. this is $3.48, plus 25 cts. for cost of can, making a can of honey cost $3.73. Could I sell at this price to distant markets? No, sir. Neither could I sell comb at 10 cts. *net weight*, which means about $2.10 per case. The best offer I got during the winter, in Denver, was $1.90 per case. The rate to Denver is 42 cts., *about* 10 cts. per case, leaving me $1.80 per case, or 7½ cts. per section. Counting off the cost of case and the sections and foundation, I have less than 6½ cts. a pound for my comb honey. To Chicago, comb would cost me, less car lots, 2 cts. or over for freights alone; extracted, a little less.

Having thus figured the thing through, I found there was no possible chance to get over 5 cts. net for extracted and 7 for comb—more likely 4 and 6, so I decided that my neighbors should have my honey cheap rather than to ship it at these prices. I accordingly advertised my extracted at 6 cts. strictly net weight, *package extra.* I would sell a customer lard-pails or 5-gallon cans at cost, or they could bring their own vessels and have them filled. Thus I sold my extracted at 6 cts. net, and had at the *least* a cent a pound for trouble in retailing, compared with the wholesale prices in the general markets. Comb honey I sold at 10 cts. net, case to go with it, or 7 to 9 without case.

My crop of extracted was 5500 pounds. It all sold at home, and I bought other and shipped in, yet have been out of extracted since about February. I had one ton of comb, shipped 20 cases of it to Denver, and still had a few pounds left the middle of May.

It is now evident that I could have sold my crop of extracted at 7 cts. had I held the price to that; but I did not know that my advertising was going to be so effective. I had bills printed and scattered broadcast, and also used a lot of honey-leaflets. The people found that the honey was as cheap as sugar, so bought it in preference to that and cheaper glucose syrups. Many who had never used honey now say they can not do without it. Five-gallon cans that I sold keep coming back to be refilled. I am so well pleased with the results of selling at home that I propose to make a local market for 10 to 20 tons a year. I know that I can sell fine extracted honey at 6 cts. *net* to many who have been using the glucose syrups that sell at not to exceed 3 cts. per pound.

Granulated sugar is a good sweet, and will, *in spite of us*, compete with honey, and there is no use ignoring the fact. My market will not take enough comb honey at 10 cts. a section at retail to consume two tons a year while sugar can be had at $6.00 or less per 100 lbs. I now have bees enough to produce this year 8 tons of honey at a yield of 50 pounds, and I believe I can sell that much at home far better than it would net me shipped out.

EXTRACTED IN LARD-PAILS; CANDIED HONEY DEFENDED.

When I extract I shall put much of it into lard-pails of 3 and 5 pound sizes (such pails hold 4 and 6 to 7 lbs. respectively of honey), and let it candy solid. I sold much that way last winter. You, Mr. Editor, in a footnote to a former article of mine, page 444, June of last year, said: "I question whether we could get the general public to look with very much favor on a package of extracted honey that is candied—one that must be brought to a liquid condition before it is consumed."

I want to say just as emphatically that the marketing of extracted honey in the candied form *can be made a success* if we will just do it. I find the people very readily take up with the idea when it is put before them, and last winter I had no trouble whatever in selling many hundreds of pails of honey candied solid within two weeks after being extracted. I put in the top of each pail a printed slip telling how to liquefy, laying the paper right on top of the honey. This way it sold right along, and was about the only way the stores would handle my extracted honey.

I do not retract one bit from my former position about the necessity of a standard *cheap sealing package* for retailing extracted honey, as told on pages 409 and 443 of GLEANINGS for 1897. All honey will not granulate solid like Colorado alfalfa, and a tight-sealing package is a necessity.

I am not alone in this experiment of marketing candied honey. Mrs. A. J. Barber, of Mancos, Colorado, has also worked out the matter, and now enjoys a local trade that can be duplicated in thousands of localities, and the consumption of honey increased many fold. Read what Mrs. Barber says for herself in a paper read before the Colorado State Association in Denver last January, and in private correspondence with me. See convention report in *American Bee Journal.*

In addition to what I said a year ago about a standard cheap sealing package, let me digress here by saying that there are very many homes where honey ought, can, and will be consumed, that have no use for fruit-jars. The package for the masses is something very inexpensive, and to cast away when emptied, or a cheap general-utility package. A lard-pail serves fairly well for candied honey such as we have here — our honey is soon as solid as lard — indeed, its color and appearance are much like lard, but it does not fill the bill.

Market conditions differ in different localities, and I am not setting an arbitrary price that apiarists shall charge for their honey; but it is reasonable and just that localities in which any thing is produced should be able to buy that product for less money than do those 500 or 1000 miles from the producer, and after transportation charges and commissions are added to it. Why is it that we can many times go to a neighboring town or city and buy a sack of flour for less money than the manufacturer of that same flour would charge right at his mill? or that manufacturers of farm machinery sell in foreign lands for less money than they charge those at the very doors of the factory? Such methods do not encourage home consumption.

If you are the only producer in a community, or if your vicinity does not produce in quantity equal to the demand, you set your price according to the demand. If, on the other hand, your production is in excess of the demand, then increase the demand by advertising and introducing your product. Show the people that you have a fine article of sweet to sell them, and that they should patronize home industry. Prove your faith by your works; and when you offer your goods, and expect them to buy, take their products in exchange in all such as you can and do use. Trade for hay, grain, flour, fuel, labor, groceries, and *all kinds* of goods you need and would buy. Remember, however, that you must not expect people to buy honey at fancy prices when they can buy *good* sweets of other kinds for much less money, and especially when selling to the *poor people.* Put up fancy goods in fancy packages for the wealthy who care not for cost so long as their fancy is pleased, but govern yourself by the demands of your customers.

Friends, I do not for a moment contend that the law of supply and demand, even though coupled with push and energy, will get us just returns for our product; for, so long as greed and oppression are allowed to have sway, so long will there be injustice. We are in the world, and in contact with evil, and we can not expect to pass through the fire and escape without some burns. The purpose of this article is to help better our condition.

Since, then, we must contend with the laws of supply and demand, and the demand is governed by needs and our ability to supply these needs, let us face the matter squarely, and do the best we can. Advertise our product and let the people know what we have. If the foreign trade will take our honey and pay more than our neighbors, ship it; but if we must sell to the city wholesale trade at 4 cents net, let our neighbors have the goods just as cheap, plus a reasonable compensation for our additional labor in selling in small lots.

My home trade at 8 to 10 cents per pound for extracted would be very limited indeed; yet at 6 cts. I can sell several times as much as at 8 cts. I can not produce much more, per colony, of extracted than of comb, but I can produce it easier—that is, with less skill, and with labor more evenly distributed throughout the season; hence I shall give more attention to extracted than heretofore. Extracted will keep indefinitely; but comb soon degenerates in appearance, which soon puts it on the level with extracted as to price, hence is the more risky product.

I say, then, produce extracted, and sell at home for the use of the masses, but limit production of comb to the demands of the fancy trade.

Loveland, Colorado.

[The foregoing is a valuable article, and contains many suggestions worth considering. It is true that, when granulated sugar can be sold to the consumer more cheaply than extracted honey, the latter will go begging. Quoted at the same price, it will work its own way into favor, especially with a liberal use of the honey-leaflets. And that emphasizes the point that now is the time to scatter them, because, if honey is to be a scarce article this year, let us all get all for it we can by a process of education such as the honey-leaflets will furnish.

I did not mean, friend Aikin, to throw cold water on your candied-honey idea. I think the scheme most excellent, and wish you might be successful in pushing it into prominence. GLEANINGS will offer you all the space you require, and its editor will be very glad to prime the ammunition.

If the trade can be educated up to the fact that candied honey is just as truly honey as it is in the liquid form, it certainly would be willing to buy liberally. Indeed, a good many say they prefer the candied to the liquid. In cold weather, a good chunk of honey in the solid form is, to some, more delicious than a good deal that is in the liquid form. This is partly due to the fact that nothing but the best of the honey candies, while the rest separates away in the watery portion.—ED.]

* * *

RAMBLE NO. 150.

A Donkey-ride up the Mountains.

BY RAMBLER.

A citizen of Los Angeles, in pointing out the various attractions of his beautiful city, does not forget to point with pride to the mountains northeast of the city. Mount Lowe is noted from having an observatory and a hotel well up toward the summit, with a cable-line railroad to nicely deposit the traveler at its doors. This railroad and the hotel are very prominent objects from the valley below, and are easily pointed out to the stranger.

A little beyond Mount Lowe is Mount Wilson, and a little more elevated. Here, instead of the cable and the electric line, we have to take the donkey train; and if any person wishes to take the most picturesque and enjoyable climb, this is far preferable. We take almost any kind of conveyance to the foot of the trail at Sierra Madre, and here we find another very good friend of the Rambler in the person of W. M. Sturtevant. This genial gentleman has charge of the trail and the donkeys, and attends to the comfort of the traveling public, whether old or young, grave or gay. Just through the gum-trees from the donkey corral he has a fine apiary; and, owing to the apiary, we became acquainted.

Mr. Sturtevant, when in the city, had several times invited me to his place, "and," said he, "come out any time, and you and your lady shall have donkeys to take you to the top of the mountain."

"But, Mr. Sturtevant," said I, "I have no lady."

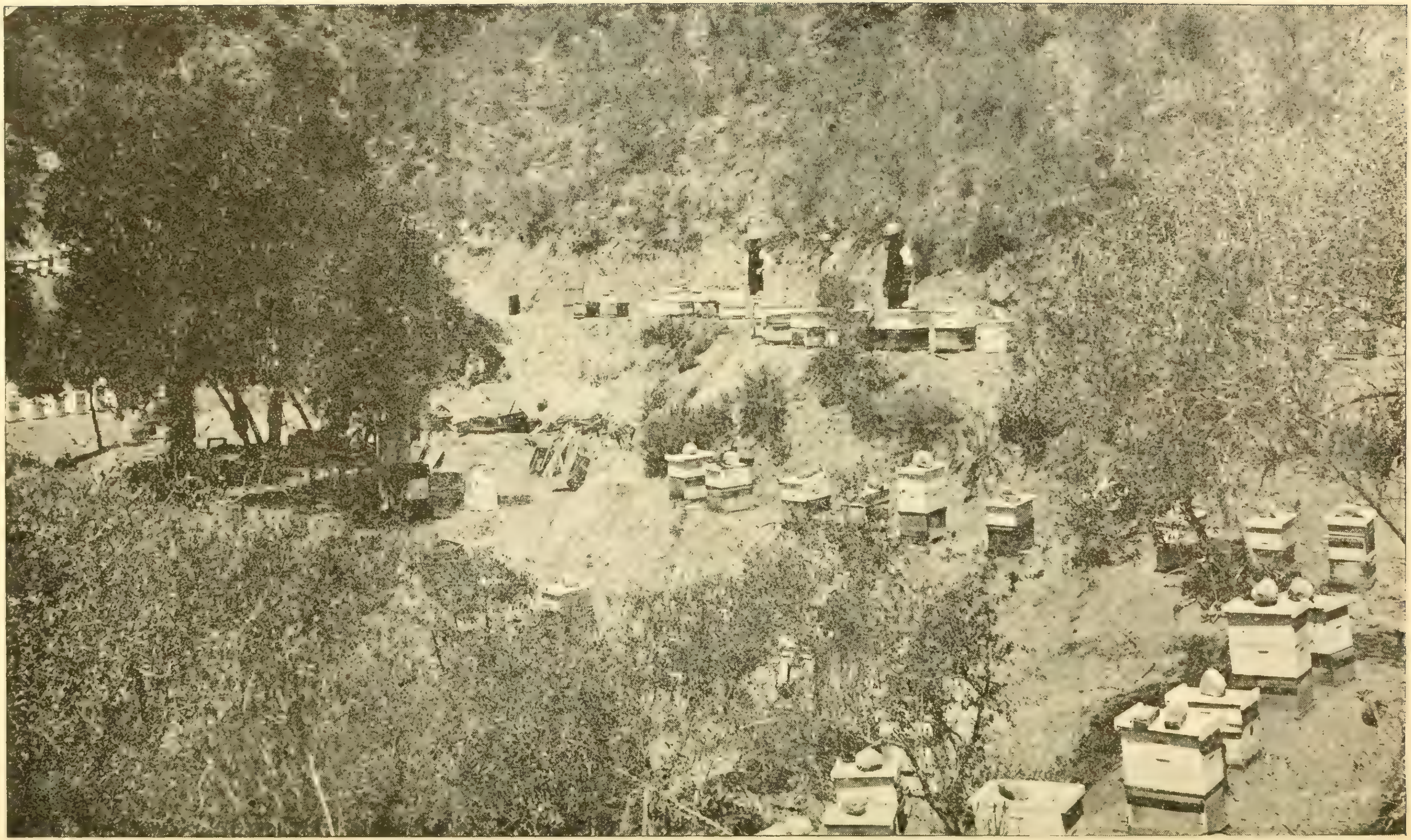
"Why, get one, Mr. Rambler, get one; it is the easiest thing in the world if you only start right."

The matter rested right there for several weeks; and one day Mr. C. A. Hatch, another good friend of mine, was in town, and I mentioned the matter to him. Now, I might have known better; for Mr. Hatch is one of those men like A. I. Root, Prof. Cook, and others, who are always preaching and practicing matrimony, and I had scarcely mentioned the matter to him when he exclaimed with much enthusiasm, "Just the thing, Mr. Rambler; my home in Pasadena, you know, is half way to Sierra Madre; come over and stop all night with me, and then you can get an early start in the morning, and have more time to spend on the mountain; and the lady—"

RAMBLER'S DONKEY-RIDE UP THE MOUNTAINS.

"Don't mention her, Mr. Hatch; don't," said I.

I finally agreed to go over the next Friday evening, and was promptly there at tea-time. I found Mr. Hatch apparently enjoying a well-regulated family—wife, son, and daughter, and occupying half a house; the other half was occupied by a Mr. Cole, who had



APIARY OF WM. STURTEVANT, FOOT OF SIERRA MADRE MOUNTAINS, CAL.

sons and daughters too numerous to mention. Mr. Hatch and I had several bee conventions that evening, and discussed the various phases of the industry. Mrs. Hatch, and, in fact, the whole family, are well posted in bee-lore, and ought soon to graduate first-class bee-keepers, for Mr. Hatch has put them through a course of training in Wisconsin, Arizona, California, and is now in Colorado; and, after trying a few more States, he will no doubt wind up in California again.

I think there was a lady present at some stage of the evening's proceedings; but the bee-question was of such absorbing interest that I had no time to give much attention to her except to note that she had a very pronounced chin. When I see this characteristic in a woman I am always shy of it, and I did not make this case an exception. At an early hour I wished to retire, and Irvin showed me the room which I was to occupy with him, and which was run in copartnership with the Cole family. After lying awake half the night trying to guess the motive Mr. Hatch had in calling that chin to his house at that particular time, I concluded to give up the problem; and, if he asked me about my night's rest, to turn it off with a joke.

Accordingly, in the morning when he asked the question about my night's rest I told him the fact that I did not sleep half the night.

"Why, what was the matter, Mr. Rambler?" said Mr. Hatch.

Said I, "Mr. Hatch, I did not think you would serve me such a trick as you did last night; besides, the weather being a little bit warm you put me between two beds of live Coles."

"Live coals? how is that, Mr. Rambler? I shall have to call Irvin to explain the matter unless you can."

"Certainly," said I; "that is easily done; wasn't there Sam and Joe Cole in one bed and Bill and Jim Cole in the other? and I guess you would have thought them alive had you heard their nocturnal gymnastics with legs, arms, and lungs."

"Oh! I see," said Mr. Hatch; "that was a regular Cole pit, wasn't it? But Irvin stands it, and I guess you can."

Then I don't know whether Mr. Hatch meant it as a counter-joke or not; but he said, "See here, Mr. Rambler, I have an action against you; that lady who was here last evening felt as though you ignored her, and has departed."

"Thank fortune," said I;" and did she take the chin with her?"

Mr. Hatch ignored my remark, and continued, "You see I had arranged to have the minister around here at an early hour; and who knows, Mr. Rambler, but you might have gone to Mount Wilson on your wedding-tower?"

"Wedding-tower? Why, Mr. Hatch, I'd not have such a tower as that fall upon me for the world; it would just crush all of the independence out of me. I feel I have had a fortunate escape."

A little after breakfast the minister came riding up in his canopy-top shay, and as fresh and smiling as a rosebud. He seemed in nowise disappointed at the turn affairs had taken. Having quite a family of his own, and being a sympathetic man, he desired as far as possible to help other men avoid trouble; and, as though he wished me to get away from that environment, said, "Mr. Rambler, we shall take that tower to Mount Wilson, any way."

Yes, he was a real good man; and the memory of him lingers with me. In accordance with his wishes, Mr. Hatch and I mounted his canopy-top shay, and away we whirled.

We found Mr. Sturtevant at the foot of the trail attending to the needs of the donkey-riders ; several parties had gone up the trail already. The first thing we attended to, however, was to investigate the apiary and the bee-fixings.

Land is valuable here, and, furthermore, bees are liable to frighten people who go by donkey up the trail; therefore the bees are crowded back into the little canyon upon land that is useful only to grow greasewood and sage. Here the almost perpendicular side hill is neatly terraced in a winding way, here around a point and there curving into a gorge. The photo shows only a small portion of the apiary, and, owing to the numerous curves, it was impossible for us to get a view of it as a whole, as it numbers well up toward 200 colonies.

In the photo before us the first man so well protected is our friend the minister; the next is the proprietor, Mr. Sturtevant; and the next is that schemer Mr. Hatch. We sauntered around the pretty terraces, and canvassed the prospects of a honey season. Mr. S. despaired of getting much except from the citrus bloom, which was then coming out, and from which he hoped to get enough to save from feeding his bees.

Mr. S. uses the L. frame, and is introducing a very shallow frame for extracting. The super can be used either for holding sections or frames; and the latter, I think, are only four inches deep. One reason with Mr. S. for using these shallow supers is to avoid the lifting of heavy supers, which is quite an item when the operation is performed all day, and by a man not as strong as Goliah.

Mr. Sturtevant's crop of honey was fair last season; but owing to the prospective failure this season, he had turned his attention to the opening of a new trail to the north fork of the San Gabriel River. Here he was laying out a new camping-ground which I have no doubt will be well patronized. For this new route his donkey corral would have to be enlarged with more donkeys. The donkeys for mountain-climbing were quite valuable, and their value increases with age and experience.

We were duly mounted on our steeds for the trail; and, while thus ready, the minister snapped the camera at us. The donkeys all have appropriate names, and Mr. Hatch was mounted upon a warlike steed by the name of Phil Sheridan. The name of my sad-eyed creature was Nelly Bly, while the minister was mounted on one of the old members of the band by the name of Noah.

It is needless to say that our trip up the narrow trail was highly enjoyable. A trail, in order to convey the tourist to the summit of such rugged and seamed mountains, is of the most tortuous description. In some places there is a sheer descent of hundreds of feet below you, and the donkey persists in traveling on the outer rim of the trail. Some nervous people get off and walk over these pokerish places; but as none of us were nervous we kept the donkeys traveling. Sometimes the trail takes such a sudden turn that the advance person of the party faces the rear ones, but still climbing on another grade. Now and then we get grand views of the country below, and the higher we climb the more it expands. Then when we reach the larger timber, what a cooling influence comes over us! Here we find more water flowing, and meet quite respectable waterfalls, which are refreshing to the eye and palate. It is no wonder that the mountains are sought by a number of people in the dry and hot season.

We gave our donkeys an occasional rest, examined the contents of our lunch-basket, and swapped jokes. Mr. Hatch, at one of these resting-places, observed bees sipping water from a mossy stone. Their direction of flight led up the mountain, showing that there were wild bees, even in these inaccessible cliffs.

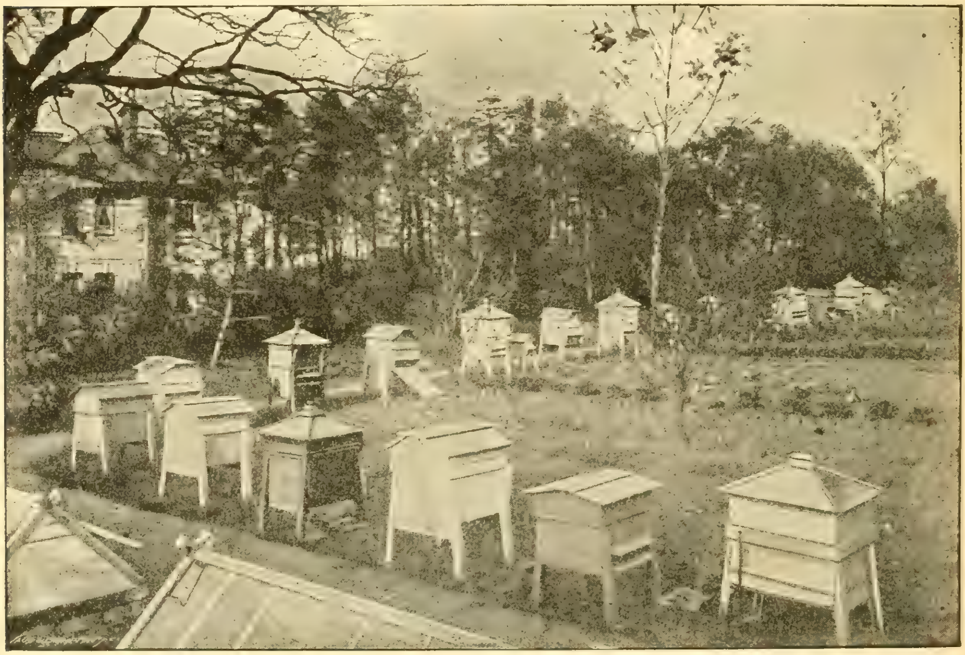
Upon our return we found our donkeys much better travelers than in going up, but still they are not a hasty animal, even in going down grade. At an early hour in the evening we were again in front of the Hatch residence, but, fearing a recurrence of the chin and the Cole pit, I hastened to take the electric car for the city, where I found rest again from the harassing cares of this life, and a kindly remembrance of my mountain trip and the friends who promoted and shared it with me.

* * *

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of John M. Hooker.

Our illustration represents the apiary of Mr. John M. Hooker, during his residence at Heathfield, Sevenoaks, Kent. The hives were placed around the kitchen garden, and were from thirty to forty in number. It will be seen from the view that they are conveniently situated for manipulation from the garden-path behind them, the hives being arranged in a single row so that the flight of the bees was in no way obstructed during examination, as is often the case where, for want of space, they are placed closer together and in front of each other. The garden operations were not interfered with by annoyance from the bees, the gardener doing any necessary work immediately in front of the hives either in the very early morning, or after the bees had ceased flying for the day. Mr. Hooker informs us that his apiary was often visited by well-known members of the B. B. K. A., and it was here that Mr. Cowan, Mr. Cheshire, and Mr. John Hunter stayed with him for the purpose of arranging and deciding the preliminary details and scope of the work "Modern Bee-keeping," then proposed to be published by the B. B. K. A.



APIARY OF JOHN M. HOOKER.—FROM BRITISH BEE JOURNAL.

The belt of trees and shrubbery on the left of the picture—behind which is seen a portion of Mr. Hooker's residence—divides the kitchen garden from the ornamental portion of the grounds.

The district of Sevenoaks is very favorable for the production of honey, and Mr. Hooker usually obtained a large quantity of comb honey in sections of good quality, and found no difficulty in disposing of it either in the neighborhood or at Tunbridge Wells. In the latter place he employed an old country woman to take the sections round to the houses of the resident gentry; and in this way, after paying the old lady liberally, a market was found for the honey at a good price. Mr. Hooker is of opinion that a home market can be found in this way in almost any district for best honey, and that better prices will be got than by putting on the market through a middleman. On his leaving Sevenoaks the apiary was disposed of; but, although living so near London as Lewisham, Mr. H. has always kept several hives, but, of course, the yield of honey from so near town is always small.—*British Bee Journal.*

BEE-KEEPING IN THE DIFFERENT ISLANDS OF THE SEA.

Their Tropical Beauties and Special Attractions.

BY W. K. MORRISON.

People often write me letters, asking for information in regard to the Bermudas and West Indies as a country for bees and as a place of residence. It is evident the writers think that Bermuda forms a part of the great West India chain, though it is much nearer to Nova Scotia than to any Carribean island.

Bermuda is just 19¾ square miles in area, hence there is no scope for bee-keeping. The colony is, however, very healthy, and any one with capital enough to buy a small place need never want. In former times the Bermuda oranges and lemons were famous for their quality. The trade has disappeared, principally from neglect. The native peaches grow well, have no diseases; but the plum curculio destroys the fruit. This would be an excellent place for a man who thoroughly understands the culture of fruits. My own opinion is that, for semi-tropical fruits, this island is much superior to Florida. As nearly all food is imported, the cost of living is high ; but an American could and probably would grow a great deal of his own supplies.

What has been said of Bermuda applies equally well to Barbadoes, except that the living is cheap—very cheap—so that it would be better to see that island. I would advise Canadians to try Bermuda, and Americans Barbadoes. This place (Bermuda) owes its value (and its prosperity) to its military position, being held to defend the great stream of commerce that flows from the British Isles to America. For these reasons persons who are not subjects of Queen Victoria can not own land. In other British colonies there are no restrictions of any sort, and life and property are perfectly safe — safer than in London or New York.

Some of the islands are excellent fields for bee-keeping, especially the "Wet" islands; but it is difficult to get an exact idea of their abilities in this respect. A live man would hardly make a mistake in trying Grenada, Trinidad, or Jamaica. Many things ought to be thought of before making such a tremendous jump, so to speak. He wouldn't bury himself, either, as one might imagine, for the people are fond of innocent sports, and with the happy-go-lucky African there is no end of amusement and recreation.

Most of the islands contain a public library kept at public expense; also excellent botanic gardens. Indeed, Jamaica and Trinidad both have gardens superior to any thing of the kind to be seen in the United States. St. Vincent has one 150 years old. Most of the islands have good churches, and all of them good medical facilities. Barbadoes and Trinidad have good schools and colleges.

In St. Kitts, St. Croix (Danish), Nevis, Antigua, and Barbadoes the people, both colored and white, speak excellent English. In Dominica, St. Lucia, and Grenada, a French *patois* is spoken, though efforts are being made by the British government to change this.

Representative government has been given up by most of the colonies, owing to the heterogeneous character of the population. Each island has some striking peculiarity to distinguish it from the rest.

Montserrat is famous for its healthfulness, the Irish brogue of its inhabitants, and its far-famed lime-juice plantations. Trinidad has its Pitch Lake; St. Lucia has its Soufliere; Dominica has its boiling lake ; Antigua its duck-ponds, and St. Kitts its Mt. Misery. In most of them the scenery is very fine. There is nothing finer in the world than the scenery of Jamaica as seen from the sea, with the famous Blue Mountains in the hazy distance. Nevis, the home of Alex. Hamilton, is a perfect gem of tropic beauty, but it saddens one's heart to see so many fine ruins about the island; for in the golden days of prosperity, when Nevis was the Saratoga of the West Indies, where wealth and fashion kept high revel, it had 12,000 prosperous white inhabitants. It now has 100. It would be a good place for bee-keeping yet. If any one has the money to spare he had better visit his would-be home first. Most of the men who hanker after Mexico or Cuba would succeed better in a British colony, where the English language prevails or is well understood, and where he will enjoy most of the comforts of civilization, and law and order well looked after. Most of the islands are healthy enough. No intemperate man should ever move to the tropics. He has no business there at all. Energetic bee-men would probably do well; but study the situation well first. Such men ought not to expect things to be the same as they are up north, and it is well not to condemn things till you are certain you understand the situation.

Those who desire information at first hand ought to write to the director of the botanic station of the particular island he desires to know about. The would-be emigrant ought to read Charles Kingsley's "At Last," Washington Eves' "West Indies," and Fred K. Obers' "Camps in the Carribbees." These are first-class books to read—anyway, especially of a winter's night.

Correspondents often forget that the foreign postage is five cents, hence their letters remain unnoticed. It is also well to inclose a stamp for reply.

WORKING THE APIARY ON THE TWO-STORY PLAN.

Some Questions Answered.

BY DR. C. C. MILLER.

Dr. C. C. Miller:—Being much interested in discussion of the two-story-brood-chamber system I should like "more light" on the following points, which please answer through GLEANINGS:

1. Is the second story left on all winter? if added in spring, when?

2. In removing this surplus brood-chamber, (*a*) what is done with the brood it contains? and (*b*) how are bees gotten out of it? (*c*) which story is left on stand—upper or lower?

3. (*a*) Are the stories alternated? (*b*) if so, how often?

4. How can the number of colonies be increased under this system? G. F. HADDER.

Mitchellville, Ia., July 16.

[Dr. Miller replies as follows:]

1. I can answer as to my own practice only, which is by no means uniform. As I cellar my bees it is more convenient to have the bees in one story through the winter. A second story is given whenever convenient, at any time before the bees are crowded for room in the one story. Usually it is given some little time before the extra room is absolutely needed, the combs of the added story being cared for nicely by the bees, and, being in their care, more free from mold, mice, and worms than in any other place. In the extra combs given, some are likely to contain more or less honey, and the bees do not despise such little attentions. If I practiced wintering outdoors, I think I should allow the bees the two stories all winter.

2. (*a*) In the fall the brood will be in only one chamber, or can easily be gotten into one. Sometimes a queen-excluder is put between the two stories three weeks before the time of reducing to one story, thus making sure there shall be brood in only one story. At time of putting on supers, any colony which has more than eight frames of brood shares its brood with those which have less; and if it should happen that there is an overplus after giving 8 frames to each, such overplus may be disposed of in any way that seems most advisable at the time, among the ways being the establishment of nuclei, and also piling the brood two or three stories high so as to have it ready to draw upon when needed.

(*b*) Of course, the only time when there will be any trouble about getting bees out of the extra story is in the fall. Sometimes the upper story is gradually raised, first being blocked up at the front end, afterward at the back end, and still later being raised enough higher so all the bees will desert the lower story, which will hardly work well unless all the honey present can be packed in the upper story. Oftener no such preliminary measures are taken. Both stories are lifted from the stand, and the upper story set back on the stand. Near by the lower story is an empty hive-body, a robber-cloth usually being over it, and one also over the removed lower story. As fast as each frame has the bees brushed from it in front of the hive remaining on the stand, it is put into the empty hive.

(*c*) When the extra story is added it is always given below, and the upper story is always considered the legitimate brood-chamber, the bees extending their room downward just as fast and as far as they have need. This makes no demand on them to keep warm any unoccupied room, which would be the case if the additional story were given above.

3. They are never alternated.

4. I am sorry to say, just the same as under any other system; for you probably have in mind that there will be no swarming, which is far from being the case *in this locality.* When the room is reduced to one story, the bees are very likely to get it into their heads that it is their bounden duty to increase and multiply. If the two stories could be continued indefinitely, the chances for swarming would be very much less. But I have not made a success of having the two stories left, and still getting a good crop of comb honey. Perhaps if I knew enough I might succeed. It is true that one year the only colony in the apiary that did any thing in supers was one that was left in two stories throughout the summer. But in all other cases the one-story colonies have done the best, I think.

With the two-story system you have also the advantage of making increase, if you so desire, at the time of taking away the lower stories, when putting on supers.

It is proper to say that I am as yet only feeling my way in the practice of using two stories. This season I hadn't enough extra combs to run the larger part of my colonies that way. I'll have more for next year. The flat failure of the honey harvest leaves me at a standstill as to progress. As the editor has been working somewhat in the same line, I shall be exceedingly glad to learn from him in what way my practice can be bettered. I think neither of us knew the other was working along the same line until after considerable time. So we may differ considerably.

Marengo, Ill. C. C. MILLER.

[I believe I would answer all the questions about the same as Dr. Miller has done, except the last one — No. 4. A two-story colony, to do much in comb-honey supers, should not only be a strong colony but one that is big enough to fill the hive crammed full of bees from bottom board to cover. As I have said, if it is not strong enough it will not do much in a comb honey super, and in that case one of the stories to brood-chambers must be taken off, and in its place should be put on comb-honey supers—not one, but two—enough to accommodate all the bees comfortably.

I do not care what you call it—substitution or contraction. If Bro. Taylor prefers contraction, then I am willing to call it such; but I have explained in another column that it is not the same kind of contraction.—Ed.]

RANDOM SHOTS.

Swarming.

BY W. A. H. GILSTRAP.

Some bee-keepers worry about swarming as if it could not be prevented. With the Heddon hive you can have the lower story on the bottom-board all the season, and put another story of combs or foundation on this one when the hive becomes sufficiently crowded, and you will have practically no swarming. If you are afraid to have colonies "too strong" you had better not take the advice above, for a four or five story Heddon hive, when the honey-flow begins, is liable to "boil over" during the honey-flow. My divisible-brood-chamber hives contained the first strong colonies this year, and could be run for swarming if you do not care to manage them otherwise.

My bees will not carry honey "upstairs" *a la* Heddon when the cases of the brood-chamber are alternated. Are my bees too much Italian, or am I too green to manage the hive properly? I use ⅜-inch hive-rests for sides and back of hive, leaving the front open during the honey-flow, with a stick about like a leadpencil under one side of the lid, which gives ample ventilation.

The above will prevent swarming, with my bees at least. After the swarming-fever commences the only way I know of to stop it at once is to kill the bees or close the hive so they can not fly.

THE U. S. B. K. U.

Skylark proposes to have all articles excluded from the bee-papers if not written by members of the above Union—*Am. Bee Jour.*, page 404. Mr. Israel never said any thing that struck my fancy better, and still it might exclude some good material from the public. How would it do to give the members of the Union a decided preference?

I believe Gleanings is still 75 cts. a year to members of any bee-keepers' society, local or national, on certificate of membership from the secretary of such organization. The secretary of the Union would be glad to send out 5000 such certificates to Gleanings, I think. I can't indorse all the editor's variety of religion; but as a bee-keepers' paper Gleanings appears to me to be in the front, and deservedly so. Just think of a membership in the Union, and Gleanings one year, for $1.75!

PACIFIC BEE-PAPERS.

They never live long. The Fresno County Bee-keepers' Association voted money out of its treasury to pay for "our California newspaper" on the generous terms offered by the publisher. Months have passed, and no publisher, paper, nor money has been located yet. I guess California soil or climate is not good for such literature.

APIS DORSATA AND OTHER PESTS.

This State is the dumping-ground for pests. We had jack-rabbits, dry years, alkali, etc. Johnson grass was brought in to flourish in our fine country, and it proved to be a curse. Bermuda grass is a genuine curse when it gets into orchards or vineyards. It can be plowed as easily as sole leather, and can be killed; but the weak-kneed and faint-hearted had better not try it. However, it makes good pasture during the hottest part of the year.

Apparently we are to escape the *Apis dorsata* invasion that was threatened. This tickles me. Please don't worry us with any new troubles. Irrigation has caused the alkali to come to the surface seriously in places. Some land that was splendid ten years ago is almost worthless now. Some land stands irrigation well. Large tracts of our land can not be irrigated because we have so much more land than water. Do you blame us for calling a halt?

COMB HONEY.

One of our worst drawbacks here in comb-honey production has never appeared in print, so far as I know. The desert sand settles on the section before and after being filled with honey unless you are very careful. Add this serious obstacle to a usually weak honey-flow and you will see why we can most of our honey.

Caruthers, Cal., July 14.

NON-SWARMING SYSTEM.

Contracting the Brood-apartment.

BY B. F. AVERILL.

Mr. Root:—Noticing the article on page 549, describing the non-success of the non-swarming system with which I experimented several season, I beg permission to reply that there must have been some serious fault in the writers' method of manipulation. I should like to inquire of expert apiarists who are readers of your journal, what would be the per cent of swarming under the following conditions of management. For instance, take in spring, at the commencement of the swarming season, a colony of bees having 8 frames of brood in a hive containing 10 frames. If worked for extracted honey, give to the division in front of hive with queen the 5 frames of brood that are liable to hatch first. To the rear of the zinc division-board place three frames of empty comb, and a comb containing young larvæ at the rear; or occasionally, if early in the season, the weather being cool, the larvæ should be placed between the frames of empty combs. Above in the surplus apartment are to be placed the two remaining combs of brood, appropriately hanging them above the zinc division-board of the lower hive, with an empty comb between them if the colony is strong. Under such conditions what per cent of swarming would be liable within 30 days? After that length of time I should expect swarms, if the surplus combs were not extracted. My experience has been that swarming is usually occasioned by that prosperity of a colony that promises a *superabundance* of population and stores. A proper manipulation will counteract in various ways all inclination of colonies to swarm, whether worked upon the principle I have explained or otherwise. Large colonies are much more inclined to swarm than small ones provided with a proportionate amount of room for storage of surplus.

Give a colony having 5 frames of brood at the beginning of the swarming season a two-story hive containing 18 frames, for their occupation, restricting the brood-rearing of the colony to the original 5 frames. They would breed up to a pretty good working colony during the season, but the number of swarms from 100 such colonies could be counted upon the fingers of one hand. Even with 6 brood-combs this liability to swarm would be about the same unless it was a very provident season and the extracting was neglected. Place a strong colony of bees under the same conditions at the beginning of the season, selecting the proper combs for the different positions they are to occupy in the hive, and where is any increased liability to swarm to be expected? I have not experimented in this way, working for section honey. There would be a little more tendency toward swarming in an apiary worked for box honey than if worked for extracted; but if this work were done just as a colony began to store well in the sections the difference would be trifling. But, this is only my opinion!

Howardsville, Va.

[Why, friend A., it seems to me your system is the *very one* that would induce swarming in a wholesale way. In my experience, curtailing the queen is almost sure of itself to breed discontent; and when you say that *large* colonies are more inclined to swarm than small ones, I wondered what kind of bees or locality you have. Your experience is almost diametrically opposed to that of the great majority of the whole bee-fraternity. Why, I supposed it was almost an axiom that large colonies are *less* inclined to swarm than small ones. What does the Dadants' experience mean all these years on this point?—ED.]

BEE-SPACES OF ITALIANS AND BLACKS.

Is it True that the Latter make Fatter Combs?

BY A. E. COONROD.

Mr. E. R. Root:—I notice in GLEANINGS, page 550, that you would like to hear from all those who keep only pure black bees, in regard to the bee-spaces used by them. I have only the black bees; and after reading your footnote to Mr. J. E. Crane's article I went to the honey-room and measured several sections and found the bee-space used by large colonies in the height of the honey-flow to be scant $\frac{3}{16}$ inch, and by the smaller colonies to be a little over $\frac{3}{16}$, or about $\frac{7}{32}$ inch; but on an average they are $\frac{3}{16}$. I use the plain section with the fence, and, of course, I measured from the slat to the face of the comb. I like the plain sections very much, but the bees fill them too nearly level full; and don't you think that could be avoided by using a section ⅛ inch wider, and making the cleats on the fences thinner? For instance, take the 4x5x1⅜ sections and make them 4x5x1½; then make the cleats ⅛ inch thick, and raise the lower edge of the bottom slat in the fence a full bee-space above the inside of the bottom of the section; also lower the upper edge of the top slat $\frac{2}{12}$ inch below the inside of the top of the section to allow the bees room to pass up into the next super above. My fences are fixed that way at the top, and the honey is not bulged any more than it would be where the cracks are in the fence, and there isn't any ridging that is noticeable. I think that, if the edge of the section could project $\frac{1}{16}$ to $\frac{1}{8}$ inch from the face of the honey it would avoid any danger of breaking the cappings in shipping or handling the sections.

Elizabethtown, N. Y., July 25.

[Our readers will remember I stated that, from numerous measurements, we found that bee-spaces — that is, the spaces from the face of a comb to a line or straight edge across the face of the old-style section—was ¼ inch. Mr. J. E. Crane, who keeps black bees mostly, found the measurement to be somewhere about $\frac{3}{16}$. The article above seems to confirm Mr. Crane's position, and would go to show that blacks use a smaller bee-space than Italians. The matter is very important, because it determines the thickness of the cross-cleats on the fences. If $\frac{3}{16}$ in. is the bee-space made by black bees, then the cross-cleats on the fences ($\frac{2}{12}$ inch) are a trifle too thick.

Now the question arises, How generally are *pure* black bees used in preference to either blacks or hybrids? My impression is, that the majority of progressive bee-keepers use hybrids, because they secure as much honey as Italians, and more than blacks; because they are proof against the moth worm, defend their entrances better, and to a great extent combine the qualities of both varieties of bees. If, on the other hand, progressive bee-keepers like J. E. Crane use black bees pure and simple, and the number is considerable enough to make quite a sprinkling in the fraternity, then it would appear that cross-cleats on fences should be only ⅛ inch thick instead of $\frac{2}{12}$. The thicker the cleats, the fatter will be the comb in the plain section. The thinner the cleats, the larger the space between the comb and the straight edge across the section.

I do not feel entirely satisfied yet that black bees do invariably use a smaller bee-space than Italians. Is it not possible—indeed, probable—that yellow bees in the localities of Brothers Crane and Coonrod would use about the same bee space — in the neighborhood of $\frac{3}{16}$ inch? For years and years we have taught, and practice seems to show it, that the space between the two contiguous combs is about ¼ inch; that, so far from being under that distance, it is more liable to be over than under.—ED.]

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

"LARGE VS. SMALL ENTRANCES," ETC.

If the reader will turn to page 166 of present volume of GLEANINGS he will see how our naughty, *naughty* editor planned for a "fight" between Dr. Miller and Doolittle. Then by turning to pages 430 and 431 it can be seen how ready Dr. Miller is to "pitch on" when he has some one to rub his ears and say, "Sick 'em!" But after he has arrived in the "arena," and looks on the "troubled waters," he evidently begins to "quake with fear;" for hear him calling for help (before Doolittle has even peered over at him) in these words: "Say, Ernest, get down off the fence and stand with me before Doolittle has time to get back at me and show that my arguments are all sophistries." Then, true to his manner of always being with the man who can shout the loudest, the editor "sidles" up to the trembling doctor and whispers these cheering words in his ear: ' Joking aside, so far it seems to me that Dr. Miller has the best of the argument." And the good doctor feels strengthened; for surely they two can "lay out" any (Doo)-little man who would dare assail their masterly arguments.

Well, it was not best to enter that arena where two such mighty warriors stood, without weapons of some kind; so I have quietly waited till furnished with the same, and by their use I expect not only to drive the sympathizing pair out, but annihilate the "arena" as well, so that there will be no further cause for "bloody" battles in the future. And what are the weapons I have found by waiting, which I did not have before? Simply truth and facts; and these are such keen weapons that theory and error can not stand against them. I took the matter right to the bees and called on them for a decision — not the way the good doctor did by raising *all* of his hives on blocks, nor by "willingly taking a few stings," as the editor thought he could, but by fixing *ten hives each way* that were of as nearly equal strength in every way as Doolittle could determine; but I used the Pettit plan of enlarging entrances, rather than the blocks, as the block plan had been tried before.

Now, what did the bees decide in the matter of swarming? Well, contrary to my expectations, three of those with the enlarged entrances swarmed before any with the common entrance did. I might say, by way of explanation, that this trial was made at the out-apiary where I use the ten-frame L. hive with from 44 to 132 sections on each, so the entrance to those used on the Pettit plan was 15 inches long by 1½ inches deep, while the others had the ordinary entrance which is 15 x½. At this apiary the season has been fairly good, some colonies fully completing the 132 sections, while here at home it has been very poor, only two swarms issuing here; while there, all would have swarmed, only as kept from it by manipulation.

When I got that great big Pettit entrance staring before me, there looked to be so much "openness" about it that I thought brood-rearing would be retarded by it, hence swarming be late, or done away with entirely; and had it not been for the block experience of the past I should have been still more surprised with the result than I was. So the *bees* decided that large entrances were no proof against swarming.

I next got down with my face right up close to the entrance, to see the bees run up the sides and back end of the hive, as Bro. P. assured us they would do; and as the bees dropped in by the score and hundred they nearly all did the very foolish thing of either alighting directly on the cluster which hung below the frames, or running till they came to the cluster, when they would climb into it and be lost from view. Thus *they* decided that a part of the claim for Bro. Pettit's system was a myth. And, lest I forget it, I want to say right here that a setting-apart of a certain number of colonies *in the same apiary*, one half to be tried by any new plan, and the other half by the old, is something that will always tell us whether there is advantage in the new or not; and by thus doing we shall often be saved making some strong assertions which will not "hold water," and also be kept from a loss that otherwise might occur.

But, how about that clustering-out which is such a great bugbear with our editor and others? Well, simply this: If bees are not crowded for room in which to store honey, all the clustering-out they may do in no way affects the amount of surplus they store, *providing* they have an entrance large enough so they do not go to gnawing to enlarge it, thus partially or wholly blocking the same, as they will often do where a ⅜-deep (or less) entrance is used.

My experience goes to prove that from $\frac{7}{16}$ to ½ inch is the right depth of entrance, contracting the other way where we wish a smaller one. "But," I hear the doctor saying, at the end of his nicely spun theory, "I don't say the bees will have 13 times the chance to keep cool they do in the other case, but I do say the chance will be more—a good deal more—a great deal more." And now comes the "locking horns" part, which pleases our editor so much, for *I* say they will not have nearly so good a chance to keep the interior of the hive cool with that great big 60-inch entrance as they will with the 15x½-inch entrance. I wonder if our dear doctor ever sat in a great big room with the doors and windows all wide open, with the mercury at from 90° to 95° in the shade, at a time when "not a leaf was stirring," when he thought he would "roast." Oh, yes! I know he has, and it did not seem that all of those doors and windows kept that room cool a bit. Presently

I see him pick up a palm-leaf fan, and with it send some of that heated air against his face, when, presto! he tells us he is feeling a cooling from it. Then did he ever have his sixty-miles-an-hour train stop dead still on such a day, and hear all the passengers go to "whewing" on account of the heat, while there was no special complaint when the train was in motion? Ah! I see the arena is getting too hot for you, doctor, as you begin to see that, with that large 60-inch entrance, the *fanners* have no power to send the heated air circulating all about the combs and hives, while they *do* have such power with the ½-inch entrance. And why the bees come out of the hive on hot days is so that they will not be so much in the way of the circulation of the air caused by the fanners, and not because it is cooler outside, for in reality it is cooler inside.

Then did you ever think, doctor, that your women-folks could do work to just as good advantage on the porch hot afternoons as they could in the house? Go look at those bees on the outside of the hive there during a good flow of basswood honey, at from 2 to 4 P. M. See any bees with jagged wings there? No, indeed, you do not — only those that are evaporating nectar and secreting wax. And they can do this work just as well on the outside of the hive as your women-folks can their sewing on the front porch. Now go and look, after the day's work is over, and see what a different appearance there is in those bees hanging out. An increased number, to be sure; but instead of the bright appearance of the cluster of mid-afternoon we have the dull wornout look of veterans which have returned from the field at nightfall. Now up with you, at the earliest streak of dawn. See, the cluster has not materially changed since last evening; but as you look, behold the "army" begins its march; the front of the hive clears; and by the time the sun is well up in the heavens the front of the hive is cleared entirely, and a busy "to and fro" is the order from that entrance during *all* the day, no matter whether the "women-folks" go out on the outside of the hive to do their work or not. All I wish to know is that there is section room enough for the bees to labor in to the best advantage; and, knowing that, I am not the one to blow smoke in the eyes of the women-folks, as our senior editor used to advise, because they chanced to go out on the front porch (to get out of the way) to do their work. Then, again, I wonder if the doctor ever heard of combs of honey in sections melting down when there were no bees in them, on bee-escape boards, through which little or no ventilation was admitted. This is so common in very hot weather that "good ventilation" is now put forth as one of the things that make some escapes better than others.

One thing I forgot; and that is, that, with my test of the Pettit entrances, the bees not only hung down below the frames so as to fill the whole space below them, but, as a rule, in *extreme* heat there were larger clusters on the outside of the hives than there were with the common entrance, this showing also that the fanners could not do as good work with the large entrance. Then, last of all, the sections immediately above the front of the hive were the last to be finished, and in many cases are not yet finished, while with the regular entrances this is not noticeable at all. Dr. Miller's "I should have continued it to this day if it had not been that the sections near this opening were too much delayed in being finished" explains why this is so; hence I will not dwell longer on this entrance matter, for I have a word or two more I wish to say while I have the doctor in the arena (which arena is soon to become a thing of the past), and that before our editor gets out of hearing distance, for he has already climbed away from Dr. Miller's side in his haste to get over on the other side.

Undoubtedly all noticed the eighth Straw found on page 537 of July 15th GLEANINGS, which reads as follows: "Instead of the queen laying her eggs on the outside of the cluster, she lays them in the center of the brood-nest, where they should be. That 'where they should be' raises the question whether Nature's plan of enlarging the brood-nest in spring is all wrong." And it was just laughable to see the editor go down on all fours in his haste to tumble to Dr. Miller's side of the matter, without even so much as stopping to reason on it at all. Say, doctor, what *is* Nature's plan of brood-rearing? Where are the *first* eggs deposited—in the center of the *cluster*, or on the outside of it? "Ah!" I hear you saying, "in the *center*, always." Then that's Nature's way, is it not? And the queen would lay *all* of her eggs there every time were it not that, as the brood increases, she is obliged to lay her eggs in the next nearest cells to those in which she laid the first, and so on and on, keeping just as near the center at all times as possible, consistent with those already in the cells. To prove your point, doctor, you must show that the queen would naturally lay the *very first* eggs of the season on the outside of the cluster or brood-nest. Can you so prove? Then, doctor, have not you and others told us, time and time again, that eggs and larvæ chill easily, and require more warmth than the sealed brood? And if this is so, where could there be found a better place for this young brood than in the center of the brood-nest? And if, on the ever extending plan necessary, the queen is finally *obliged* to lay her eggs on the outside of the brood-nest, will not he be a benefactor who shall so cause it to come to pass that the queen can lay in the center while the sealed brood is on the outside?

I have been taken to task during the past for following so implicitly in "Nature's footsteps," the argument being produced that man, by his great skill and invention, could greatly improve on Nature's "wrongs" (?), and after such chidings by the doctor and others it seems a little singular for him to go to quoting "Nature" to try to prove that — well, ahem! the editor doesn't seem to know whether he wrote the sentence quoted or not. But, no matter whether he or some one else wrote it; it will take more proof than the doctor has produced to prove it wrong. The readers are waiting for further proof, doctor.

[One swallow does not make a summer, neither do two or three of them. The experiment friend Doolittle tried, of three colonies with wide entrances that swarmed, would hardly be a conclusive one in the face of the fact that Mr. Vernon Burt, who operates some 300 colonies, and has used wide entrances off and on for three years, and this year exclusively, gives it as his opinion, that they are a big success. Dr. Miller seems to be pretty well satisfied of their value, and our tests this season, not on two or three entrances, but on a good many, have been favorable. But all our bottom-boards are made reversible, so that, if the bee-keeper receiving them believes as friend Doolittle does, he can use the shallow entrance side

I do not know about bees going to the sides of the hive, as Bro. Pettit claims they do. Perhaps he is right, and perhaps he is wrong.

There, I guess I had better stop and let Dr. Miller cover the other points in the triangular lock-horn contest. It would not be fair for me to take any more space.—Ed.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

DO BEES HAVE COLOR SENSE?

That Straw quoted by Dr. Miller, and the footnote by the editor, page 538, opens up a very interesting subject. Are bees attracted by color? Can they distinguish color? Have they any preference of color? Some years ago I was interested along this line of study, and made some experiments to satisfy myself, and am fully convinced that the above questions can be answered affirmatively. My experiments were not exactly original, but, rather, copied and repeated with variations from Sir John Lubbock, so fully and interestingly described in his work, "Ants, Bees, and Wasps." He very clearly proves that bees have the color sense clearly developed, and that they have a decided preference for blue. His experiments were conducted with great care and patience, and are worthy the attention of any student. In his work on "Flowers, Fruits, and Leaves," Sir John says bees prefer a bright or vivid color to a dull one; and bee-fertilized flowers are bright and sweet, while fly-fertilized flowers are dull, and characterized by evil odors. Fortunately for us the great majority of flowers are bee flowers. Chas. Darwin, in the "Descent of Man," paragraph 516, gives some very interesting observations. He says, quoting from H. Muller, "That bees have a keen perception of color is certain," and then he continues to show the important part color often plays in sexual selection. These facts and observations may not help us very much in increasing our honey crop, but I think it is much better to know a few things that are so than to know a great many that are not true, even though they appear ever so practical and money-making. I refer to those you complain of in one of your editorials—those new (?) Yankee inventions that so amused Mr. Cowan.

Notes and observations on color perception of bees, from some of our great bee-masters, would no doubt be interesting to many readers of Gleanings. L. W. Lighty.

East Berlin, Pa.

LARGE OR SMALL HIVES.

Mr. Root:—I should like to say a few words on the large vs. small hive question. After the experience I have had I still believe that those who advocate the use of ten frames in preference to eight do so because they pursue methods entirely different from what are generally pursued by producers of comb honey. In fact, they are mostly extracted-honey men, such as the Dadants and C. A. Hatch. With my methods I am just as much in favor of the eight-frame brood-chamber as ever; and I would assure the thousands who have adopted them that they will not regret it. They need only to learn how to use them properly. It would not do to hive swarms on ten frames of foundation or ten empty combs in working for comb honey, without contracting the brood-chamber. I want a hive that I can work without contracting. The eight-frame size fills the bill. The ten-frame would be all right if it could be worked so as to avoid swarming; but can it be done? A very good plan to pursue, if one wishes but few swarms, is to use two eight-frame hive-bodies tiered up; then, if they swarm, hive on a single brood-chamber and give sections. The same swarm, if hived on ten frames, would not be ready soon enough to catch a short honey-flow.

So far as my experience goes it will not do to contract a brood-chamber so that the super containing the sections will extend over beyond the combs occupied by the bees; therefore I want no contraction as advocated by W. Z. Hutchinson. With me it would not work unless the super were contracted to match.

There is a great deal in getting used to certain methods. I have no doubt that the wide-brood-chamber men are successful in *their* way; but I believe that E. R. Root, Dr. C. C. Miller, and others are getting hold of the method of using the eight-frame brood-chamber in a way that makes it one of the best all-around comb-honey hives for this climate—a method in which contraction by frames is avoided, and manipulation of whole brood-chambers only is necessary.

Harry Lathrop.

Browntown, Wis., July 8.

DOOLITTLE DEFENDED ON THE FACING MATTER.

Mr. Root:—On page 502, July 1st, in a note concluding an item on facing comb honey, by Dr. C. C. Miller, you say: "Now, I wonder how many of the bee-keepers this year, if they get any honey, will take pains to put the combs in the shipping-cases at random."

Now, while I do not desire to open the discussion of the subject of facing comb honey, I do desire to correct what seems to me to be a false impression conveyed by the foregoing quotation. I know of no one who advocates putting up honey or any other product at random. The objection has been made to dishonest facing, putting a prime article in sight, but filling the rest of the package with inferior stock. For one, I distinctly stated that I saw no objection to Mr. Doolittle's method of packing; namely, sorting it up into XXX, etc., and packing the entire case with the same grade. Such honey is *all* the same grade, and of equal value for all practical purposes, but who will pretend to say that the symmetrical proportions of the comb are exactly alike?

We owe something to good taste and order in putting merchandise and other products before the eye of the customer. To illustrate, let us take the case of an apple-grower after having sorted stock for packing There would be nothing dishonest in putting the first course at the head of the barrel, with stems all down, and the apples placed in courses, so as to appear the most attractive when the head of the barrel is removed.

So also with comb honey. Sections being of the same quality, there would be nothing wrong in putting such as are capped as though a straight-edge had been used, to the front. There is no fraud in such packing as that, as the quality of the package is the same. Have I made myself clearly understood?

WILLIAM M. WHITNEY.

Hospital, Ill., July 16.

[It seems almost impossible to cut off this discussion, but as these seem to be the tail end of the matter I let 'em pass on their merit.—ED.]

"FACING" IN HUMAN NATURE.

I have carefully read all the articles on facing fruits, honey, etc. While this looks like great deception, I want to say that not only fruits, honey, etc., are faced, but the whole human family is shown to the world with the bright smile in society; but the dark, faulty, gnarly acts are brought out on closer inspection. Frequently we select representatives in Congress who prove their whole lives and beings are full of corruption, fraud, and disrepute. R. R. RYAN.

Salem, Oregon.

DO BEES CARRY THE QUEEN WHEN SWARMING?

One of my neighbors came the other day to tell me there was a swarm in his garden, on the ground. I went and hived them and brought them back. Next day I looked in the hive and found a clipped queen. I could hardly believe my eyes. There are no bees nearer than two miles, and that queen was clipped like mine, on the left side, both wings half cut off. The swarm was 200 yards from the nearest hive, and there was a field of three-feet oats between, so she could not have crawled that far. There is but one explanation of it—the bees carried her. The above swarm was hived in a new hive with frames filled with foundation. G. GROSS.

Mt. Tabor, Wis.

THE IDEAL SUPER ALL RIGHT.

I have seen only a few reports in regard to the "Ideal" super, no-way sections, etc.; but what I have seen are, I am glad to say, most favorable. Let me add my mite. I like them very much, and shall add to what I have another year, and use none other. Then, too, if you wish an extra-large section, one that will weigh 2 lbs or more, just use two of the 1-lb. sections with a sheet of extra thin foundation between; press together, and fill up a super with these. What have you? 20 two-pound sections equal to 40 one-pound, and you also do away with three fences, but add one more pattern slat. The advantage of this, I think, is that you have extra-long honey cells, use just half as much foundation, and then it is less trouble to put in the foundation (I believe in split sections); and when you use the honey for home consumption you are not compelled to eat much extra thin foundation; and I believe that, the deeper the cell, the better the honey. Success to the Ideal!

Honey will be scarce here if we do not get rain soon. I am depending almost entirely on the fall flow for much surplus.

Malden, Ill. GEO. O. MORRIS.

[Yes, you can make 2-lb. sections on that plan. And that calls to mind the fact that plain sections will permit of doubling up on this plan where the ordinary scored-out boxes could not be used —ED.]

FRIEND MORRISON TELLS US ABOUT PORTO RICO.

Dear Mr. Root:—We were all pleased to hear from you, but were sorry to hear it was so hot. The highest yet reached here is 84°. It may get to be 1° more next month—August. After September I shall leave for the West Indies. I shall take a look at Porto Rico. It is a very fine island, and the most prosperous. It is a very fine bee country. It is the only part of the Spanish colonies worth owning. Tell President McKinley that.

W. K. MORRISON.

Devonshire, Bermuda, July 21.

[We shall hope to hear from friend M. regarding bee-keeping in *our* newly acquired possession.—ED.]

WHAT KILLED THOSE BEES?

I had a queer thing happen the other day. A friend of mine sent me a young laying queen, and I had no place prepared for her; and as the honey season was about past I thought I would gather half a gallon or so off the ends of several hives that were all covered with them. So I took a dustpan and took perhaps a pint off six or seven hives, and put them in a wire box I have for the purpose—box 12 in. long and 6 or 8 square, and put them down cellar, intending to give them the queen in the morning; but in the morning almost every bee was dead. There was about 3 qts. of them, and they looked as though they had been daubed with honey. Now the question is, "What killed them?" I don't know. I often, several years ago, made swarms in that way, and they always did well.

Springfield, Ont. JOHN YODER.

[It would seem as if the bees had smothered. They will look as if they had been dipped in honey when confined in a tight compartment for a time. But the wire cloth cage—I hardly see how they could smother in that. I give it up.—ED.]

LARGE HIVES AND LARGE ENTRANCES; FREER VENTILATION IN THE SUPERS.

I indorse fully what you say in regard to large hives and entrances. I use from one to four eight-frame bodies, according to the needs of the colonies, and I do not let my bees hang out. I give what ventilation is needed, at bottom. I had swarms from my "double deckers" that could not be crowded on 8 frames; and I find that, to produce honey, one must have the bees, and 8 frames will not give room enough for an average queen. I have some that have filled 14 frames.

I have never used the fence and plain section, but I believe the fence is a good thing. I bored ⅜ holes in part of my separators this season, and I find that the bees commence work sooner, and do much nicer work—fewer pop-holes. I am going to give the fence and plain section a trial next season; also drawn foundation, as I think it will pay as baits if for nothing else. J. T. HAIRSTON.

Salina, I. T., July 20.

SECTION-HOLDER SUPERS OR T SUPERS—WHICH? THE LATTER PREFERRED.

I have been using Root's goods for some years, and this year I got six Dovetailed chaff, ten-frame, and ten eight-frame Dovetailed hives, all having the section-holder super, and I was pleased when I looked at them, and thought they were just the thing. I turned two of them over to the bees; and when they were filled I took them off from the hives, and then when I went to lift out the section-holder I found the whole thing securely glued together; and after I got the holder out I found the sections glued on each side to the bottom of the holder. Then I thought of the old style of movable slatted-bottom supers, and wondered where the improvement was; but by pulling, prying, and twisting I got the two supers emptied, pitching the holders and separators all out in a pile. I then calmly viewed the pile. It seemed like a barrowload. I then wondered what under the sun a man wanted to handle all that pile of surplus stuff for when three simple T tins would very much better answer the purpose. If ever I got a mean thing from the Root Co. I think it is this. Dr. Miller is ahead. A T super properly made is simplicity and perfection. I am not a man who swears; but I don't care to be tempted, so I will have these all changed to T supers, and the Root Co. must help.

Atwood, Ill. J. W. C. GRAY.

[There are a large number who hold just the opposite opinion. But let each one take which he likes. We give the option in our catalog.—ED.]

REPORTS ENCOURAGING

We are getting the largest crop of honey since 1885. I never got so much from clover. Basswood is just opening, but I fear the "take" from that will be light. I have just harvested 7750 qts. of strawberries from an acre of ground. Please tell this to A. I.

Bristol, Vt., July 11. A. E. MANUM.

This year, from 90 colonies, spring count, increased to 130, and we have 7000 lbs. comb honey. Last season we had 2300 lbs. We have 5000 lbs. comb honey to sell. It is clover and basswood; will take 11 cts. per lb. for it. ALBERT SNELL.

Clayton, N. Y., July 20.

We have now taken about a carload of honey, nearly all from basswood. This is not a large yield from about 500 colonies, but it is not a failure, as we expect some more from basswood in the northern apiaries, and usually get a good fall crop from all.

Portage, Wis. FRANK MCNAY.

This is the best season in this vicinity for the past 10 or 15 years. The following are the principal producers, and amount of crop.

Ham Smith, 1000 lbs., 12 swarms.
A. Gussy, 2000 to 3000 lbs., comb.
Jacob Moore, 1500 to 2000 lbs., comb.
Gracy Talcot, 1000 to 1500 lbs., comb.
I. Badder, 1000 to 1200 lbs., comb.

Ionia, Mich. HAM SMITH.

This season has been a very good one in this locality. I have so far secured nearly 60 lbs. per colony, spring count. Basswood is now in the height of its bloom. With this and buckwheat yet, I look for the above figure to be considerably increased. Basswood has a very heavy load of blossoms, but does not appear to yield as well as it does some seasons. G. F. TUBBS.

Ammimsuck, Pa.

REPORTS DISCOURAGING

I run my apiary for comb honey. I have been keeping bees ten years. This year has been the poorest I ever had. Out of 45 hives I have taken only 125 lbs., and that of poor quality, being dark and strong. I have visited a number of small apiaries, and find they have no surplus honey.

Adairville, Ky. J. G. TRAUGHBER.

It has not been a good honey year in this locality. There is an abundance of white clover; but much rain in the month of June, and since the fourth of July a severe drouth. We shall have 300 or 400 pounds of white comb honey to sell. WM. BROWN.

Rochester, Minn.

EDITORIAL
BY
E. R. ROOT

PRICES STIFFENING.

IT is a great pleasure to note how prices on comb honey have stiffened. See our Honey Column. We used to think that supply and demand had but little to do with the price of honey; but this poor year has shown that the price is going up. Whether it will go higher than 12 or 14 cts. for white and fancy, I can not say. Last year at this time prices were ruling at 9 and 10 cts.

HARRY HILL.

THAT new editor of the *American Bee-keeper*, Mr. Harry E. Hill, is going to give us all warm competition. His experience in keeping bees is probably more varied than that of any other apicultural editor in the United States. He has seen and kept bees from New York to California, from California to Florida, and from Florida to Cuba. He, if any one, ought to know the influence of locality and its effect upon bees. The *Amer. Bee-keeper*, under his editorial management, fairly bristles with good things. GLEANINGS offers its congratulations to the W. T. Falconer Co.

NARROW SECTIONS.

MR. HUTCHINSON has this to say regarding the width of sections :

> The width of sections that I used this year is only one and one-half inches. Several years ago, when I lived at Rogersville, I used several thousands of sections of this width. This is the width that bees naturally build their comb, and they build this width of combs more even and straight without separators than they do the thicker combs. They complete and cap the combs quicker. Fourteen sections weigh about twelve pounds. I like sections of this width.

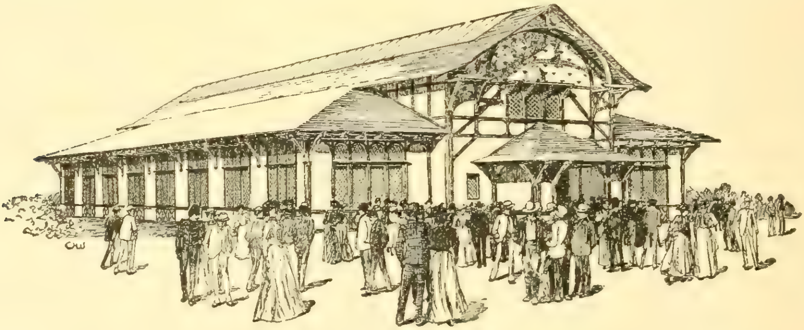
If I can read the signs of the times the trade will gradually work toward lighter-weight section honey-boxes — not for the purpose of deception, but because the wholesale price of honey has got down so low that one or two things must happen : The price must go up or quantity decrease. In good years the former is out of the question.

PEANUT QUEEN-CELLS.

THOSE big peanut queen-cells on a stick, *a la* Doolittle, give larger and better queens, according to our Mr. Wardell, than by the old method. I supposed this was true, but there is some satisfaction in having it proved before our eyes. I have just received a line from Mr. Alley, inquiring why we fuss with artificial Doolittle cups when the natural ones can be raised more cheaply by the bees, as per directions in his book. But there is one great advantage in artificial cups; viz., they stiffen the base of the cells so that one can mash them right into the side of a comb, without crushing the cell itself. The natural cell-cups are frail things, and require to be handled like eggs.

THE APIARY BUILDING AT THE TRANS-MISSISSIPPI EXPOSITION.

IT is not often that bee-keepers are fortunate enough to secure a separate building for the display of bee-exhibits. Two or three such buildings have been secured at several expositions ; but they were comparatively small, and were lacking in architectural appearance. But, thanks to Messrs E. Whitcomb and L. Stilson, a magnificent building 75 x 138 feet has been erected at the Trans-Mississippi Exposition. Of it, E. T. Abbott, of the *Busy Bee*, who has seen it, says: "It is safe to say no such building was ever before erected exclusively for the display of apiarian products." The *American Bee Journal*, in speaking of its appearance, says, "It is of the Swiss farmhouse style of architecture, and is declared by experts to be the best arranged building ever erected for bee exhibits."



APIARIAN BUILDING AT THE OMAHA EXPOSITION.

Unfortunately, owing to the fact that we were fairly snowed under with orders we were unable to get our exhibit in place at the opening of the exposition ; but Supt. Whitcomb was kind enough to grant us an extension of time. If every thing has gone according to calculation our exhibit is now erected and in place. During the convention, Sept. 13, 14, 15, one or more of our people hope to be present to "explain things."

The big convention, and the largest and most magnificent of apiarian displays, with the very low railroad rates, ought to prove drawing cards — to bee-keepers. Let every one come who possibly can.

RAILROAD RATES FOR OMAHA.

THE next meeting of the United States Bee-keepers' Union will take place at Omaha, Sept. 13, 14, 15. Railroad rates will be one fare for the round trip plus $2.00 "from the Western Passenger Association territory east of and including Utah, except that from points within a radius of 150 miles of Omaha the rate of one fare for the round trip will apply." Reasonable rates have been secured at hotels, and you may be sure that Bros. Whitcomb and Stilson will see that every necessary detail is carried out. The Home of the Honey-bees will be represented of course.

SNOW-WHITE OR CREAM-COLORED SECTIONS.

THE editor of the *Review* quite agrees with Mr. G. K. Hubbard, that it is only the bee-keepers who demand snow-white sections; that neither the merchant nor consumer asks for them. And in turn I quite agree with Mr. Hutchinson, that it is poor business management to pay for extra whiteness. In our catalog for the last two years we have tried to educate our fraternity up to this sort of doctrine, but somehow bee-keepers will insist on white goods, in spite of the fact that white honey would show off to better advantage in the darker or cream-colored box. Put a cake of nice white honey, for instance, down on some clean snow and it will appear dark by contrast. Of course, snow is whiter than the whitest basswood; but there is a great deal of this wood that is much whiter than the average of white honey; and I can not and never could see the sense of paying more money for the so-called snow-white when it is quite liable to make the honey it incloses appear darker by contrast.

The supply-dealer is perfectly willing to give his customers their choice; and if they are determined to pay more money for the white sections, he has no fault to find.

THE HONEY CROP FOR 1898 POOREST IN YEARS.

LATER reports seem to confirm previous reports to the effect that the season this year comes as near being a failure, so far as honey is concerned, as any year bee-keepers have had for many a year back. A few have been fortunate enough to secure good crops, and market quotations, owing to scarcity, indicate an advance in both comb and extracted. The season seems to have been the poorest in our own State of Ohio. In sections of West Virginia, Pennsylvania, Indiana, Michigan, Wisconsin, and Minnesota, good crops are reported; and the season in Vermont seems to have been exceptionally good; and reports indicate fair honey-flows in other portions of New England. Of course, the season in Central and Southern California was a complete failure, owing to a lack of rain. In Northern California some honey was gathered. Colorado is the one State out of all the rest that will be the banner honey State this year, for the season was considerably ahead of last year. Very flattering reports have come from Florida.

COMB HONEY IN PLAIN SECTIONS.

WE have examined several lots of honey put up in plain sections; and, while not as free from pop-holes as we hoped, they are certainly an improvement over that in the old style. The combs are whiter, probably through a freer circulation, and are a little fuller in the boxes. Well, here are three letters that will speak for themselves.

Your sections and fences are perfectly elegant; and I consider the fence the neatest, best, and most convenient thing ever devised for the purpose of separators.
Bloomingville, O., July 22. R. R. HARRIS.

I have tried the plain sections and separators, and, contrary to expectation, they are a decided success. Owing to the free communication throughout the super, the outside sections were filled and sealed right along with the center ones, while only 15 to 20 sections to the super of the old kind would be found finished. I believe the perfect communication afforded by the "fence" to be the most important point in its favor. W. A. CAMPBELL.
Cisco, Ga., July 26.

My honey-flow is over, and I am well pleased with plain sections. I find that it requires more care to handle them; but they show up better and are more attractive than the others. I tried them on a small scale this year, and will increase next.
Calvert, Ala., Aug. 4, L. W. MCRAE.

In the case of some, at least, plain sections will be filled out no better than the old-style with bee-ways; but with a number of others they are, to all appearances, better filled. I have just been looking over a large shipment received from Geo. E. Hilton, of comb honey all in plain sections. As I looked over those boxes of beautiful combs I could not help feeling just a little satisfaction that I had had a hand in showing up the merits of fences in no-bee-way sections.

So far we have received only one or two reports to the effect that some of the plain sections of honey would not crate, owing to the bulging. We were at a loss to account for this, especially as we received so many favorable reports of the opposite character. So far as we could ascertain, there was no uncratable sections where the supers and fences were properly constructed. But we put out last season what we called our "S fences," having cross-cleats the same thickness as those used on our other fences. We did not then discover that we here made a mistake, for the cleats should have been $\frac{3}{16}$ inch thick, on fences to go in old-style supers instead of $\frac{2}{12}$. This made an error of $\frac{1}{24}$ inch, and the accumulated error would reach as high as $\frac{1}{8}$ inch down to $\frac{1}{48}$ inch. This resulted, of course, in the combs bulging more in some sections than in others, and, of course, they would be uncratable. We wonder now at our stupidity in not seeing this in the first place; but as we sold only a very few, comparatively, of our S fences, the trouble will not be very widespread.

One important fact has developed since the season opened; namely, fences and plain sections must be wedged tightly together in the super. If not wedged there is a possibility of some uncratable boxes of honey in a super. We called attention to this through our catalog and through our journal, and all the plain sections and fence separators sent out last season were provided with thin wedges; and, so far as we know, all the honey produced in P, I, and T supers with fences are cratable.

I was talking the other day with one of our good customers, Mr. McAdams, of Columbus Grove, O. He bought a number of supers with plain sections and fences. He was prejudiced against them in the first place; but as there was so much said about them he thought he would give them a trial. After testing them he was agreeably surprised; and, much to his astonishment, supers with plain sections and fences were filled more readily by the bees than supers containing the old-style sections with bee-ways. The second letter above given is a case in point.

I stated last fall that it was *my opinion* that supers containing plain sections and fences would be entered more readily, on account of the freer communication, than supers of the old style. From the few reports already received, it would begin to seem as if the theory were going to be borne out by the facts ; but, as I said to friend Doolittle in another column, page 625, one, two, or three swallows do not make a summer. I do not, therefore, put it down as a fact that the plain sections will be filled sooner than the old style ; but it stands to reason that the supers of the new style approach a condition more nearly in accordance with nature. Combs in a box hive or in a bee-tree have free communication from one side of the cavity to the other. They are not shut off in so many little boxes. The up-to-date super of last year made it necessary for bees to build their combs in small shut-off compartments. In the up-to-date super of this year, with plain sections and fences, the bees have not only free communication from side to side across the face of the sections, but free communication between the slats.

Now, dear reader, we shall be very glad to receive reports covering all the points I have named above. Let us know whether theory is really confimed by the facts ; and while the major part of the honey crop is in most localities secured, I have been assured that the frequent rains give promise of abundant crops from buckwheat ; and I hope some of our York Staters, if they have read what I have said, will make careful observations.

CONTRACTION OR SUBSTITUTION; THE EDITOR CRITICISED AGAIN BY THE REVIEW CRITIC.

THERE are some things that Mr. R. L. Taylor, of the *Review*, does not thoroughly understand in reference to the recent discussion that took place between us, and he desires further light. He is inclined to think I am quibbling a little on the subject of contraction by calling it "substitution," and then asks for my definition of "contraction." I suppose each one of us would define the term a good deal according to our practice, past or present. But the contraction that I condemned was of that sort which implies the reduction of an eight or ten frame brood-nest down to five or six frames, the space being filled with dummies prior to putting on the supers or the issuing of the swarm. And, by way of parenthesis, it is apparent that Mr. Taylor, as well as myself, would condemn this sort of practice. The contraction or substitution that I recommended had reference to two-story colonies, or double brood-nests, each as large as the eight-frame type. To contract an eight-frame brood-nest down to six or eight frames is one thing ; and to contract a two-story sixteen-frame brood-nest down to eight frames is another thing. A five or six frame capacity is small for any thriving colony, it seems to me; but an eight-frame brood-nest, with at least two supers to take the place of the brood-nest taken off, would give the bees all the room they could occupy. Now, I am willing to admit, for the benefit of friend Taylor, that both are a species of contraction; and to save any further argument I will call it contraction. But there is a distinction, "allee samee" (excuse slang). One kind I can indorse; but the other kind I condemn as bad practice.

Again, Mr. Taylor says :

> To show the ill results of hiving swarms in contracted brood-chambers, and that that plan is being abandoned, the editor quotes two instances from the "first volume of the *American Bee Journal* that he picked up."

Now, Bro. Taylor, I do not know that I anywhere on that page (518) stated that contraction of the other sort — the Hutchinson kind—the kind that takes place *after* the hiving of the swarm—was being abandoned. I introduced only the two instances where such a procedure seemed to be a failure, to show that it had not been a success with *all*. Then on the same page I quoted another man who had used the plan, and expected to continue it.

Again, Mr. Taylor still insists that I imply that two and three story colonies do not swarm, by picking out *parts* of a couple of sentences. If he will read the *whole* article through carefully—or, better, the several articles—and not pick out a sentence here and there, he will see that I do not convey that impression. A single sentence in any article is quite apt to be misleading when taken by itself.

In one other portion, page 243, referring to the size of brood-nest in its relation to the size of the colony, he says he does not understand me, and says he presumes it is owing to his stupidity. Not at all; but his confusion has made me worse confounded. Perhaps it is I who am stupid. But I am certain that our methods and beliefs are not so very far apart when brought to an exact focus, except, perhaps, that he believes that a single eight-frame brood-nest is large enough, and I hold to the opinion that I want, some of the time at least, two brood-nests of that size.

There are some things, Bro. Taylor, that even the printed page apparently reveals as through a glass, darkly; but be that as it may, there can be no animosities at *this* end of the line. Why did I refer to it? Because some of our readers, not knowing us both personally, might think we were at loggerheads. You are not in the habit of wishy-washying (excuse again the slang) your friends with honied words; and when, therefore, you criticise I know there is a kindly spirit back of it all.

NOTES OF TRAVEL
BY A. I. ROOT.

On Thursday, July 28, I started with all the enthusiasm and animation of a schoolboy at vacation time, for my trip to Yellowstone Park. Thanks to our recent rains, Northern Ohio was looking remarkably well. The Lake Shore & Michigan Southern Railroad passes through a very fine part of our State ; and the miles of cornfields, stretching far off into the distance, with their rich dark green, is a refreshing contrast to *some* of the cornfields we passed earlier in the day. I tell you, it is a beautiful country along in the vicinity of Norwalk, Clyde, Fremont, and so on to Toledo. The towns and cities are full of business, and are growing ; and the farming lands are all occupied with good crops, with scarcely an acre growing up to weeds and rubbish, as we see it in some places. Near Clyde we see acres of cabbages, and I am told they ship them by carloads. The stations along the road I have mentioned are not only models of neatness, but the grounds adjoining are, many of them, really beautiful. It is a very pleasant road to travel on, all the way to Chicago. And, by the way, Northern Indiana has some beautiful manufacturing towns and cities, as well as Ohio I was pleased to see on the bill of fare in the dining-car, " No wines or liquors sold while passing through Ohio." Now, why can't Indiana and Illinois scrape up energy enough to come up to the same standard? Can any one explain it?

Let us go back to Ohio a minute. Round about Fremont there are a sort of prairies with beautiful natural groves, or patches of woodland, that make the route especially beautiful; and another feature that took hold of *me* mightily was the beautiful stone pikes, hard and smooth. In the summer time the wagon-travel is mostly on the dirt road at the side, leaving the hard stone road almost clear for the boys and girls to run their wheels. I did not find these stone roads in Illinois or Indiana. The Lake Shore road has been called "America's greatest railway." Any information in regard to travel over it, either east or west, will be given by A. J. Smith, General Passenger Agent, Cleveland, Ohio.

Toward night we had a refreshing thunderstorm, and I enjoyed watching the farmers as they dropped their tools and hurried in out of the wet. Most of them covered their harvesting-machinery with a canvas sheet made on purpose, but not all. A few pulled their plows out of the furrows and turned them up so the water would run off quickly and let the polished metal soon get dry again. Now, friends, how many of you leave your plows in the dirt when a rain comes up suddenly? Quite a number draw manure out on the oat stubble just as soon as the grain is cut and shocked up.

On account of the rain I stopped at the Great Northern Hotel, near the depot. It is 18 stories high, and things are in fine style, I tell you. I should like to show Huber an electric device that turns out the electric lamps when you take the key out of the door of your room. If you remove the key from the door when you are on the *inside*, the lights don't go out. When you go into the bathroom it is lighted up and stays lighted up till you go out. As soon as you go out and shut the door the lights are out. This modern hotel has many similar surprises.

I am writing these notes on a shady seat in Lincoln Park. I am close beside the Aquatic Garden. Water-lilies of gorgeous hues, and as large as dinner-plates, are all about me. Yes, and the celebrated *Victoria regia* is near, and in full bloom too. Almost all the water-plants are in bloom. The water-poppy is a pretty plant, and seems to thrive at common temperatures. Some water-hyacinths of immense size, far larger than those in Florida, are making a beautiful show just now. I came over here on a wheel that the editor of the *American Bee Journal* was kind enough to lend me.

Very early in the day I asked a policeman (near the big hotel) if he could tell me where I could rent a wheel thus early. He thought a while, then said, " Oh, yes ! I can fix you out exactly. There is a feller sleeps in that place right over there, just to catch such trade. But you will have to make a —— of a racket to get him up."

Now this policeman was very kind and gentlemanly, with the exception of that blank word. Would it be too great a thing to expect of the Chicago police, or would it be too great a task for them to consider that the stranger asking information *may be* a Christian, and that he *may be* greatly pained to hear talk like that?

I am afraid I have said it before, but I *must* say it again : Never before in my life have I seen such entrancing, gorgeous beauty as the scene before my eyes, as I sit contemplating an acre or two of bedding plants in Lincoln Park. The flowers and plants are not new ; but the grouping and contrast form a harmony of colors that I did not know before was possible. Several things, perhaps, combine to give me this *thrill* of joy and pleasure. You see, it rained last night, and the warm rain was just what the plants "thirsted" for. And I have had a wheelride, and then a delicious nap here in the shade of a tree, with the lake breezes fanning my "brow." Then there are boys and girls all about me. Little ones are trudging along delightedly with their pas' and mas' lunch-baskets, tin pails, etc., for they have come out on the street-cars and are to have a picnic in this beautiful place. Besides the flowers, there are animals and birds—birds of plumage that rival the flowers ; and then beautiful fountains are playing and splashing on this warm July day.

I don't know what this great beautiful park cost ; but say what you will of Chicago, she has done a grand and noble thing for her people and for her *children* in making this beautiful spot where they can get air, exercise, and health. I have visited the parks of nearly all our great cities, and would put Lincoln Park, Chicago, ahead of all others.

The landscape west of Chicago, although still devoted to grain, contrasts with what I have passed in being more rolling; and the vast prairie land, dotted with its wooded hills, makes a very pretty sight indeed. I don't see just why all the timber is on the hilltops, unless it is that the more fertile valleys have been cleared off. As we get into Minnesota I am reminded again and again that Minnesota wheat leads the world in quality if not in quantity. The Chicago & Northwestern is one of the best railroads to ride on I know of. Almost 400 miles were made (stops and all) in a little less than 10 hours; and there was so little dust that, although I rode constantly with an open window, I scarcely felt travel-stained at all. The country around Eau Claire, Wis., is especially delightful, and I saw one very pretty little apiary right near the track.

Our Wagner cars were not only electrically lighted, but a little shaded incandescent globe is right on the back of every seat, right over your shoulder, so you can read the finest print as easily as by a shaded lamp on your own table at home.

D. M. Aldridge, T. P. A. of the Chicago & Northwestern Railroad, Cleveland, O., can tell you all about the Pioneer Limited, Chicago to St. Paul and the far Northwest; also to Omaha, Denver, and California via the electrically lighted vestibuled trains.

Mr. and Mrs. Acklin were at the depot at St. Paul to welcome; but as I didn't know them and they didn't know me it was hard to "pick each other out" in so great a crowd; but we made it. I gave great praise to Lincoln Park, in Chicago, but I shall have to confess Lake Como Park, near St. Paul and Minneapolis, almost its equal, both in size and embellishment. No beer is sold on the grounds, no dancing-pavilions, and no *dogs* are permitted to enter. I beg pardon for the combination I have made—it just "happened so." Another thing: On the picnic ground at Como Park, just at sundown, Saturday night, they had an Endeavor meeting on a platform in the open air. Somebody said an Ohio man was in the crowd; and, after being invited, I told them it gladdened my heart to see the ancient custom revived of commencing the sabbath day at sundown Saturday night. By the way, there is something peculiarly impressive about an open-air meeting just about sundown. Just try it, you Endeavorers, and see if you don't get a special blessing.

On the siding, near Mr. Acklin's, we saw a beautiful new passenger car inscribed "Glad Tidings." At first I thought it might be for some new sort of pleasure excursion, or something of that sort, and then I pondered that there is only one "glad tidings" that the world can ever receive, and investigation showed the car was really devoted to the "glad tidings of great joy," and no other. It is an evangelist car, and appropriate scripture texts are to be found inside and out.

You may remember that St. Paul is the city that has a part of it where the people will not tolerate a saloon of any kind, and so they *don't have any.* Do you catch the moral? If you don't, visit both localities and you will then.

I saw a boy in St. Paul who sat perfectly still on his wheel when he was waiting for a car to pass. He simply turned the front wheel around at right angles, and sat as still as if he were on a stool. If we might all catch on to this it would save a lot of getting off and on when waiting for teams or cars to go by.

All through the West I see potatoes without any kind of blight, although in many places it has been very hot and dry. How glad we should be to have such a state of affairs in Ohio!

While near Minnehaha Falls, looking at the Mississippi River going down the rapids, I asked why in the world that great volume of water was not made to drive the electric cars between the twin cities, as well as to furnish their lights. Well, next day, when at Minneapolis, I found they had been doing this very thing for some time past. A series of dams are all down through the city—dams so secure that the great freshets go right over them without doing injury. These dams carry turbines that drive great dynamos; and this immense water force drives the greatest gristmills the word has ever produced. Minnesota wheat and flour lead the world.

Years ago a genius planned to harness the boisterous river, and he actually made a great tunnel right under the river bed; but it broke through all at once, and washed the venturesome miners out at its mouth in such a great maelstrom of water they could never be induced to go in there again, and the ruins of his enterprise still stand unfinished.

HIGH PRESSURE GARDENING BY A. I. ROOT.

BEE CULTURE AND AGRICULTURE IN JAPAN.

We are greatly pleased to receive, from the firm mentioned below, a copy of a work on bee culture and also a sample copy of a popular agricultural work published in Tokyo, Japan. We take the liberty of copying the letters just as we received them. Our good friend Ikeda will, I am sure, pardon us when I tell him that I am sure his kind words will touch the hearts of thousands of our American people:

Gentlemen:—I have the pleasure to offer you a copy of Prof. Tamari's work on bee culture, and a sample copy of our "Popular Agriculturist." These are published by us, and in the latter we should like to give some remarks on bees. If you will kindly give us your valuable paper hereafter, in exchange, we shall be much obliged to you. J. Ikeda.

Tokyo, Japan, June 28.

In Japan, apiculture is not developed yet, though people have kept bees from unknown time. The species of bee is perhaps a native one. They work very diligently, and are very gentle, but they neglect to gather up all the honey from one flower, but move too soon to other flowers, leaving the honey behind.

They are not able to make a great swarm, but are liable to make another swarm soon. Sometimes the first-separated swarm separates again during the year.

The body is a little smaller than an Italian, and its abdomen is gray. The hives are not made especially, but some empty barrels are used, and they are put under the eaves of a house.

These bee-keepers are almost ignorant as to how to make a new swarm, and think it is good luck. There is a proverb, saying that "when one's hives go to increase, one will be a millionaire"

Prof Tamari, of our Imperial University, has a reputation that has spread all over the apicultural world. He was a pupil of Prof. Cook, and was very much inspired by this interesting industry; and after he left America he practiced it and wrote a work devoted to that line, and taught people the way to feed bees. This book was so much welcomed that it soon reached the third edition.

We have hives now, and are trying to gain Western knowledge of them.

We publish a monthly magazine called *The Popular Agriculturist*, devoted to agriculture, and we should like to give some remarks in it on bee culture. If you will teach us any thing in that line we shall be very much obliged.

Some scholars say that Japan has progressed lately. If that is true, it came from an American named Commodore Perry. He opened our seaport, and taught us to introduce Western knowledge.

Now, in another way Prof. Cook gave us light through Prof. Tamari. We owe very much to you Americans. Long live America! J. IKEDA.

Tokyo, Japan, June 27.

The book on apiculture contains a picture of our apiary here at the Home of the Honey-bees—or, at least, it was a picture before our buildings encroached on the boundaries of the apiary. The book contains 170 pages. It has some excellent plates in the back part, of all things pertaining to bee culture. The letters are Japanese from beginning to end; and unless I look at the pictures I can not tell whether the book is right or wrong side up, nor can I tell the right side from the left. The characters are all Japanese. There is not even an English figure. The presswork is excellent. The cuts show remarkable skill and ingenuity. The book on agriculture contains excellent cuts of most of our well-known vegetables, with a comical picture of a market scene in the back part, with a radish so big they are almost holding a picnic on top of it.

Let me say to our brother, in answer to his closing words, "Long live America," "Long live Japan;" and may the time speedily come when we shall not only unite in the pursuit of bees and agriculture, but in bringing righteousness, temperance, and purity instead of iniquity, over the face of the whole wide world.

GREENHOUSE-BUILDING.

A. I. Root:—Some time ago you spoke of making sash for a greenhouse by putting the glass in a saw-kerf. Have you tried it enough to know if the plan is a success? I am going to build a small greenhouse, and should be thankful for any hints, as I am a new hand, and have but a small capital. What is the cheapest reliable way of heating? What size of glass would you recommend? F. W. HUMPHREY.

Oronoque, Conn., May 25.

By all means, butt the glass instead of lapping it over. If I am correct, glass for greenhouses, sashes, and almost every purpose, is now almost universally butted. Lapping is the old-fashioned out-of-date style. For many purposes, greenhouse men prefer that joints between the sheets of glass be not absolutely air-tight. If, however, you do want them air-tight, be sure the glass is cut square enough to make the ends fit; then dip the edges in thick paint, and you have a water-tight joint with very much less shade than when they are lapped.

The cheapest way of heating is by a flue, as described in the tomato-book. But a much more satisfactory way is by the use of steam. Hot water costs a little more than steam, but has some advantages. The larger the glass, the less shade you have. But larger sheets cost more per square foot than small ones. In covering our greenhouse recently with a permanent sash roof, instead of sashes we used glass 12x15, and that is a very good size. And, by the way, don't use sashes at all on your greenhouse, but slide your glass right into grooves cut in the rafters. We think it will pay you to have some of our books on greenhouse construction, even if you are going to build ever so small. I would recommend especially "Greenhouse Construction," by Prof. Taft. The price of the book is $1.25. It would pay you to have a knowledge of all the recent improvements, even if you do not invest more than $25 in the way of a greenhouse; for a good many times it is *cheaper* to build right than it is to build wrong.

TOBACCO STEMS AND TOBACCO DUST—THEIR VALUE AS A FERTILIZER.

Mr. Root:—Look in the April 30th issue of *Rural New-Yorker*, page 321. Prof. E. B. Voorhees says that tobacco stems are worth $10 to $12 per ton for manure, and that agrees very nearly with the analysis made by the chemist of the Massachusetts Agricultural College. The insecticide property may, at a higher price, make them valuable.

Bozrahville, Ct., June 7. WM. H. ALLEN & SON.

Thanks for your suggestions, friend A. If I am correct, our question to the people at our Experiment Station was in regard to the tobacco *dust*. The tobacco dust we use and sell, I think must be of considerably more value than the stems, as the stems are composed to so great an extent of woody matter. The dust, when it decays, resembles the leaf-mold we find in the woods. The stems would be more like brush. I should be glad to have some of our Experiment Station people give us further facts in regard to the matter.

HEALTH NOTES
BY
A. I. ROOT

A HINT FOR GOOD HEALTH AND LONG LIFE.

It can not but be surprising to any one who will give the subject a moment's consideration of the fact that, when we remember that our lives are so entirely dependent on the air we breathe, that our *health* must very largely depend on the same element, and on the manner we use it in our daily lives; and in view of this, how seldom is the fact mentioned or considered, or any means proposed by which we shall be the better prepared to use it to the best advantage!

Will you allow me to suggest a hint for the regular practice of a way that will not be a task, but an absolute enjoyment of that which will both enlarge our capacity for using this life-giving element, and, without a doubt, do much toward improving our health; and, if it does not prolong our lives, it will give greater enjoyment while we live.

My plan is to combine some pleasant singing with the regular task of expanding the lungs by deep breathing. Select a time when you can be at leisure for a few minutes, say at the close of the labors of the day, when you have seated yourself to rest. Select a hymn suitable to the hour (I have chosen one for my own practice, "Glory to thee, my God, this night," which expresses thankfulness for the blessings of life, and a prayer for forgiveness, for protection and guidance), having all strictures removed that would interfere with the full expansion of the lungs, and choosing a very easy tune to suit the words. I am careful to draw in a *full* breath before I begin; and, as I proceed, after every two lines I replenish the lungs with another deep inspiration:

Glory to thee, my God, this night,
For all the blessings of the light.

Draw in another full breath.

Keep me, oh! keep me, King of kings,
Under thine own almighty wings.

Draw a full breath.

Forgive me, Lord, for thy dear Son,
The sins which I have ever done.

Another full breath.

That with the world, myself, and thee,
I, ere I sleep, at peace may be

Another full supply of air.

Teach me to live, that I may dread
The grave as little as my bed.

Fill the lungs full.

Teach me to die, so that I may
With joy behold the judgment day.

Again another full draft.

Oh! may my soul on thee repose,
And with sweet sleep mine eyelids close!
Sleep that shall me sprightlier make
To serve my God when I awake.
If in the night I sleepless lie,
My soul with heavenly thoughts supply;
Let no ill dreams disturb my rest,
Nor powers of darkness me molest.
Oh! when shall I in endless day
For ever chase dark sleep away,
And, with the holy angels, sing,
Glory to thee, my God and King!
Praise God, from whom all blessings flow;
Praise him, all creatures here below;
Praise him above, ye heavenly hosts;
Praise Father, Son, and Holy Ghost.

This practice every day requires not a full force of the voice. The main requisite is to get a full expansion; and this will in a short time enlarge the ordinary breathing. The normal respiration of the majority of persons is less than one quart, while our all-wise Creator made us with a lung capacity of four to five quarts, unless we have been so foolish as to curtail it by tight clothing. We laugh at the Chinese for binding the feet of their girl babies; but we, who call ourselves enlightened Christian females, put ligatures around our waists, and reduce their size one-third to one-half the size God intended they should be, and then wonder that we fail to enjoy good health, when we are unable to breathe enough air to bring the blood to its proper health giving state. Dear reader, have you sinned in that way? If so, confess, repent, and do so no more. A. H. Van Doren.

My health got worse by the time I wanted to go to South America, so I didn't go, and I have to tell a better remedy than even lean meat, to get good health and to keep it. I found it just a month ago while reading. I became convinced, and I laid the book down long enough to remove my medicine-bottles off the table and out of sight. Then I called on the Lord to be my doctor, partner in my work, guide, protector, and friend. I asked him to teach me to "love my enemies," and to have full faith in truth, and to let me show it in my work, so I may "have life, and that more abundantly," as Jesus said. In a few days I had opportunity to make love to my most bitter enemies. I had never done them any *harm*, but they knew that they couldn't expect to be treated kindly. I spoke to them kindly, and invited them to come and see me, whenever in my neighborhood. I tell you, it was as if a cannon-ball had fallen on them. After a little they said, "You must come and see us."

This is only a sample I am telling you. Every thing I have around me is flourishing, and I am feeling God's blessing more and more day by day.

I never was very bad (at least, to my knowledge); but this is a different thing, to "be born again" (of the Spirit). We had a good sermon here explaining humanity and divinity, when Nicodemus came to Jesus in the night. In Adam we have death, and in Jesus eternal life.

Since I have found full faith in God I haven't touched a drop of medicine, and am getting better daily.

Goulding, Fla., May 13. Chas. Herrmann.

Friend H., I rejoice in the discovery you have made. A great many times during this poor life of mine, when doctors and all human aid seemed to be at fault, I have had some experience much like your own Some say that you are mistaken—that it is imagination, etc. But, dear friends, a mistake that causes a man to—love his enemies, and to do good to those who hate him, can not be a very bad mistake, for it is placing one's feet on the solid rock — the rock Christ Jesus, that can never pass away, even though the heavens and the earth do pass away. May God be praised, dear friend, for the experience you have given us, so honestly told, and so plain and simple. May we all profit by it.

KIND WORDS FROM OUR CUSTOMERS.

STRAWBERRIES AND BEES.

I am pleased to tell you that the two "Earliest" and one "Darling," received some time ago, are doing splendidly; are all sending out plenty of runners—in fact, are doing more than I expected, and I am well pleased with them. Please let me hear from you. My bees have done well this season—as well as they did last, but the weather is cool now, and they can't do much. I expect to have at least 2000 lbs. from 39 colonies, spring count, and increase to 52.

Alphin, Va., July 11, 1898. P. I. Huffman.

Mr. Root:—Your visit to Vernon Burt, in July 15th issue, was read with interest. All such visits to bee-keepers are interesting. As most of the large successful honey-producers seem to be too busy, or, for some reason or other, do not write out their practice and experience for others, the only way for the rest of us to know their way of doing things is to visit them; or the least expensive is to subscribe for the bee papers and have the editor or an able correspondent visit them and write it out for the rest of us. Your travels among bee-keepers have always been appreciated.

Renfrew, Pa., July 21. H. H. McKinney.

Thanks for your kind words in reference to a visit among bee-keepers. This is a feature that we hope to keep prominent in Gleanings.

I subscribed for Gleanings last year, beginning September 1st; clubbed with A B C of Bee Culture. With the instruction obtained from them I have been very successful with the few bees which I have; and by following the directions given in the A B C I have not made one mistake. I have transferred, united, divided, and requeened, without a single loss, and had no knowledge that these things could be done before. I have now ten fine colonies in dovetailed hives, and I am proud of them. I am glad that I ever became a subscriber to your journal, as I believe every word of it to be conscientiously written, and I hope some day to have an experience interesting enough to be worthy of a place in its columns.

Modena, N. Y., July 11. Stephen Paltridge.

THE STORY OF THE BIBLE.

Dear Mr. Root:—I have thought many times that I would tell you how much good the "Story of the Bible" which you gave to our children years ago, had done in our home. On the fly-leaf is written, "Harold, Dudley, and Caddie Reed, from Uncle Amos, April 2, 1884." It was read to the older children for years, and now it is doing duty for Ted. It has been read through to him once, and we have got as far as the book of Job in the second reading. He will listen and enjoy hour after hour Sunday afternoon, if he can only get some one to read to him. I think we can hardly overestimate the good such books do read to children when they are quite young, giving them a good knowlegde of the Bible, and helping them to keep the Sabbath at the same time.

I want to thank you in the name of our entire family for sending us this book.

With kindest remembrances to you and yours, every one, I am, Very sincerely,

Oberlin, O., July 13. Kate A. Reed.

[I suppose you will notice the above was not intended for print; but I am sure the dear friend who sent it will not object when I explain to her that I feel just as she does, that this book ought to be put into the hands of the children more than it is. Her experience is just about the same as ours with the book in our own family. At one time we thought Huber would keep reading it over and over, to the exclusion of every thing else, if we did not stop him. We used to sell these books by the hundreds, and I do not know why the sale has dropped off unless it is because other things have claimed attention. But I wish that those who have the book would look it up; and if their own children are not already familiar with it, start it going again. Lend it to the neighbors' children, and see that it is kept busy doing good until it is worn out. The price of the book is $1.00; but it is so large that the postage on it is 24 cents.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS,** the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00, tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

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Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

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By return mail, safe arrival guaranteed. Stock the best. Thirty-five years' experience in breeding the Italian bees warrants me in saying this.

1 Select Tested, for Breeder,	$2.00
1 Tested,	1.50
3 Tested,	3.75
1 Warranted Purely Mated	75
3 " " "	2.00
5 " " "	3.00

Send for 40-page descriptive catalog of Bees, Hives, and a full line of general supplies at prices to suit the times.

All orders accompanied with cash will receive prompt attention. Address

W. W. CARY, Lyonsville P.O.,
Formerly Colrain, Mass.

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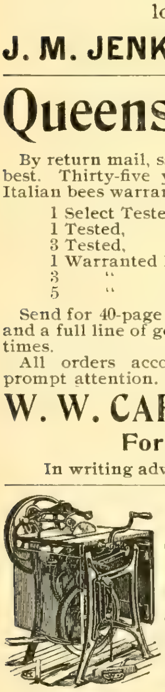

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Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Calalog free.* 1-24ei

Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

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32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

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Special Offer. For the next 90 days, we will sell warranted purely mated Italian queens at 50 cts. each; ½ doz., $2.50; tested, 60 cts. each; ½ doz., $3.00. Safe arrival guaranteed. 15 years' experience in queen-rearing.

LEININGER BROS., Fort Jennings, Ohio.

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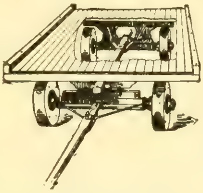
QUEENS. Untested, 70 cents; 3 for $2 00; after July 1st, 50 cents each. Tested queens, $1.00 each. Best Italian stock. Satisfaction guaranteed by return mail.

Theodore Bender, Canton, Ohio.

Low-down Broad-tire Farm Trucks



originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddlers' wagons. Steel-wheel trucks, $18.

Farmers Handy Wagon Co., Saginaw, Mich.

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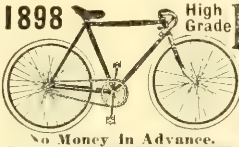

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Juveniles $7.00 to $12.50

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Large Illus. Catalogue Free. CASH BUYERS' UNION,
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Dollar Eggs? Yes, after June 1st we will sell all eggs at half price, $1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmas, Langshans, White Wyandottes, Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

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Send for our book, "Everything for the Poultry Yard," (14th annual edition); eighty 6x9 pages; finely illustrated; full of information; you want it; it's free. Address

Geo. J. Nissly, Saline, Mich.
Established 15 years.

In writing, mention Gleanings.

HELEN KELLER.

Our readers have doubtless kept pace with the wonderful story of Helen Keller; but, notwithstanding, I think they will keenly appreciate the following extracts from a personal letter to her good friend (and our good friend) George O. Goodhue. I think no further introduction will be needed for either one or the other:

> Please tell Uncle Amos I had a letter from our dear friend Helen Keller last week. She retains a firm hold upon the warm affections of all her old friends, and is constantly gaining new ones.
>
> 'She is now having her vacation; has a new tandem bicycle, with which she is perfectly delighted. How Uncle Amos would enjoy being her guide on some of these trips! It would certainly chase the "blues" far away. She has also a "dear little boat," the Naiad, in which she often rows a companion three or four miles. I wish I could accept her invitation to join her this summer in some of these trips. Listen to her whose beautiful soul eyes often see so much more than ours of grosser and dimmer sight:
>
> "I do wish I could give you a row around King Philip's Pond, it is so beautiful. The trees and bushes come down to the water's edge to look at their own beautiful images, and the lovely pond-lilies greet the day with a shower of perfume."
>
> Not only does she see with loving, sympathetic sight earth's beauties, but her vision is also strong and clear as to that which affects the welfare of the world. The following extract is from another letter I received some six weeks ago:
>
> "Of course, you are feeling very sad about the war. War is cruel, and this one seems unnecessary. I can not help sympathizing with the poor Cubans Spain's cruel treatment of them makes me burn with indignation; but at the same time it seems dreadful that my dear country should have been the first to break the peace of the world, even though her motive is so generous and humane."
>
> I will add one more extract from another of Helen's letters, a charming illustration of her graceful clearness of vision as well as tender heart. After telling me of other books which interested her, she says:
>
> "I have finished Nansen's thrilling narrative of his Arctic expedition. I found it most fascinating. There is something new and startling on each page, and I was thrilled through and through by the bravery and daring with which he and his clever men encountered peril after peril, and passed safely through all dangers in their wonderful vessel, the Fram. From the regions of eternal snow and ice I descended into the fair forests and mountain glens of Scotland, where dwelt in the days of old the Lady of the Lake. The poem is simply exquisite. Its verses, as my fingers run over them, pour out a stream of song and romance; and the easy, graceful flow of the poet's thoughts, and his lovely descriptions of beauty, valor, and chivalry render it most charming. But I can not help being glad that the poem belongs to the past and not to the present, and the endless wars and struggles which it celebrates are over forever; for I see, through the shadowy veil of romance that Scott has drawn over these times, the ruin and desolation and sorrow which were as much a part of those struggles as the heroic exploits of Roderick Dhu and his warriors."
>
> Danville, P. Q., Canada.

Every time I get a glimpse of Helen Keller's life I can not help saying to myself, "Why is it that there are so many having two good eyes and yet do not see, and, having two good ears, do not hear?" Helen Keller, with this double misfortune, is still joyous over God's great mercies; and yet, can it really be true there are those who have the full use of all their faculties, who really lack for nothing, and yet throw their lives away—yes, even commit suicide? The very name of Helen Keller ought to be a rebuke to every one of us when we are tempted to complain, or to forget God's many and great and precious gifts. Dear friend G., we are greatly obliged to you for giving us these extracts.

SPECIAL NOTICES BY BUSINESS MANAGER

THE OMAHA EXPOSITION.

Last fall we made application for space in the Apiary Department of the Omaha Exposition. When the time came for opening we did not have our exhibit ready, and we were so rushed with business that we advised the management we could not get ready till our orders were taken care of. We recently forwarded an exhibit that we have every reason to believe is in position. E. Whitcomb writes us that, through the heated term, the attendance in the Honey Building has averaged 100 an hour by actual count, while the day before he wrote his letter it was four times that. It is likely, now that the war is over, that interest in the exposition will increase, and the attendance be largely augmented from now on.

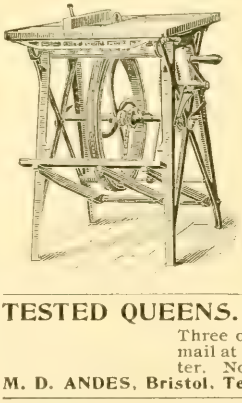
DEPARTMENT STORE.

Because of the increasing demands upon our time and strength, owing to the increasing demand for the goods we manufacture, also because of the need of more room, as well as for other reasons, we have decided to close out our department store. For the next four or five weeks we shall push the sale of the stock on hand by special low prices on many lines, especially of odds and ends not listed in our catalog. By Oct. 1st we expect to turn the bulk of the stock that is left, over to another firm with whom we have made arrangements to succeed us in this line. If any of our readers have in mind ordering goods from our department store we would advise them to do so at once, so that they may have their wants supplied while we have the stock to furnish.

LATEST FROM THE EDITOR.

Just as we close our pages the following comes to hand:

Friday, Aug. 5, out in the wilderness.—I rode 40 miles on the stage-coach yesterday, with less fatigue than I supposed possible; but we were all the while looking at the "wonders." The women of our crowd declare they will have a rope tied to me to-day, to pull me away from the edge of the boiling craters. Once I was looking down into the awful chasm in the throat of the Monarch hot spring. They said an eruption was coming; but I wanted to see how it started. Finally the driver thought we couldn't wait any longer; but I had hardly turned my back when it shot up a column of water and steam almost 100 feet high. I am just getting the "hang" of them, so I can get up close and not get hurt. No words can describe the beauty of the quiet hot springs that are unceasingly building their structures of gorgeous coloring.



Barnes'
Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. *Machines on trial.* Send for illustrated catalogue and prices.

W.F.& John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

TESTED QUEENS.

Three or five bands now ready to mail at 75 cents each. None better. No untested queens for sale.

M. D. ANDES, Bristol, Tenn.

FOR SALE. — Good ranch for bees and general farming near San Diego, California. Price very low to make a settlement. Address

G. C. GEARN, 864 Fifth St., San Diego, Cal.

The Biggest Offer Yet!

Last year only about one per cent—only one subscriber in 100—ordered his Review discontinued. If the Review could secure 1000 new subscribers the present year, there is an almost absolute certainty that at least 900 of them would remain; not only next year, but for several years—as long as they are interested in bees. Once a really *good* bee journal visits a bee-keeper a whole year, it usually becomes a permanent member of his family.

I should have no difficulty whatever in getting twice 1000 new subscribers this year, if all of the bee-keepers in this country had read the Review the past year. I have sometimes thought that it might pay a publisher to give away his journal one year, simply for the sake of getting it into new hands. There are, of course, decided objections to such a course; but I am going to come as near to it as I dare. Here is my offer:

If you are not a subscriber to the Review, send me $1.00, and I will send you twelve back numbers, the Review the rest of this year and all of next year.

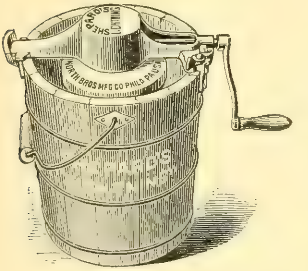
Each issue of the Review especially if devoted to the discussion of some special topic, is really a pamphlet containing the best thoughts and experience of the best men upon the topic under discussion Twelve back numbers of the Review are, to a certain extent, so many little books devoted to as many different phases of bee keeping. Some issues of the Review are now out of print; of others only a few are left; while of others there are several hundred. Of course, I shall send those of which I have the most, but no two alike.

Most people subscribe for a journal at the beginning of the year. In this case there is no use of waiting, as you will get the Review for next year just the same as though you waited until next January to subscribe, and you get all the rest of the numbers for this year *free*. The sooner you subscribe, the more free issues will you receive.

Let me tell it over once more. For $1.00 you get twelve back numbers, the Review the rest of this year, and for all of 1899.

W. Z. HUTCHINSON, = = Flint, Mich.

CLOSING PRICES ON ICE-CREAM FREEZERS.


SHEPHERD'S LIGHTNING
NORTH BROS MFG CO PHILA PA

We have in stock a quantity of Shepherd's famous ice-cream freezers, which we offer at the below named prices in order to close, owing to the lateness of the season.

2-qt., each, $1.35.
4-qt., each, 1.85.

THE A. I. ROOT CO., Medina, O.

Second-hand Wheels Cheap.

ONE WHEEL.

Name-plate lost; gents'; maroon finish; Morgan & Wright quick-repair tires, in good order; weight 25 lbs.; price $15.

ONE $150 REMINGTON TANDEM.

Gear 68 or 72; a fine machine, used but little; 1897 pattern; wood reversible handle-bars; Hartford single-tube tandem tires, practically as good as new. We offer this for an even $40.

THE A. I. ROOT CO., Medina, Ohio.

FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by

Emerson T. Abbott, St. Joseph, Mo.

Write for *free sample copy now.*

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

In writing, mention Gleanings.

For Sale Cheap.

We have the following articles which we offer at special low prices to dispose of.

One set Burrell's telegraph instruments, consisting of key sounder and relay for four gravity batteries, etc.; cost $15 00; we offer, to close, at $7.50.

One guitar, excellent tone; cost $12 00; we offer at $7.50. First order gets it.

One ladies' bicycle; cost $45.00; used a few months; we offer, to close, at $23.00.

THE A. I. ROOT CO., Medina, O.

ITALIAN QUEENS for sale. The rest of the season, 50 cts., or three for $1.00. Colony, $4.00.
MRS. A. A. SIMPSON, Swarts, Pa.

ITALIAN BEES FOR SALE CHEAP. In good condition. Apply to
H. M. MOYER, Shanesville, Berks Co., Pa.

Wants and Exchange.

WANTED.—To sell cheap for cash or to exchange for any thing useful, St. Bernard puppies. Could use incubator, Poland-China sow, or registered Shropshire sheep. W. W. PREVEY, Elroy, Wis

WANTED.—All I can get of No. 1 white-clover honey in Danz. 4x5 plain sections State price, quantity, and good or bad points in the 1898 Danzenbaker hives. F. DANZENBAKER, Box 466, Washington, D. C.

WANTED.—To exchange Barnes footpower saw (latest improved), good second hand bee-hives, or raspberry-plants (Cuthbert, Marlboro, Louden, Miller, or Golden Queen), for thoroughbred B. P. Rock early-hatched pullets. Reference, Bank, East Berlin, Pa. L. W. LIGHTY, East Berlin, Pa.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
BYRON WALKER, Evart, Mich.

WANTED.—To exchange a Barnes foot-power saw, and double-barrel shot-gun, for comb or extracted honey, or offers.
JOHN T. ELLIOTT, Colliers, W. Va.

Black and Hybrid Queens for Sale.

Black and hybrid queens at 30 cts. each.
C. G. MARSH, Kirkwood, Broome Co., N. Y.

Columbia

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Bevel Gear
CHAINLESS
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OUR CHAIN WHEELS.
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Other Models at Low Prices.
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We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes Price list free.

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Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Untested, 75c; 3 or more, 65c each. Send for 40-page catalog, information to beginners, etc., free.

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Ready! Stacks of queens reared under most favorable conditions from either three-band or golden strains, *warranted* at 60c each; 6 or more, 50c. Free circular. Am member N. Q. Breeders' Union.

J. B. CASE, Port Orange, Fla.

MUTH'S HONEY-EXTRACTOR,
SQUARE GLASS HONEY-JARS,
ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "**Practical Hints**" will be mailed for 10 cts. in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.

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Honey Column.

CITY MARKETS.

DETROIT.—Fancy white, 11@12; No. 1 white, 10@11; No. 2, 9@10. Extracted, white, 5½@6. Beeswax, 25@26.

M. H. HUNT,
Aug. 10. Bell Branch, Mich.

CHICAGO.—The new crop is now coming forward, and meets with a fair demand. Best grade of white comb, in 12 to 24 pound cases, 12c; that which is faulty, 10@11; amber, 8@10; dark, 7@8; extracted, white, 5@7; amber, 5@6; dark, 4@5. Beeswax, 27.

R. A. BURNETT & CO.,
Aug. 18. 163 South Water St., Chicago, Ill.

CLEVELAND.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½; light amber, 11; buckwheat, 9; extracted, white, 7; light amber, 6. The demand for honey is exceptionally good, owing to the crop in this vicinity being very light.

A. B. WILLIAMS & CO.,
Aug. 20. 80-82 Broadway, Cleveland, Ohio

MILWAUKEE.—The attention of the consuming trade is very much taken up now with fruits of all kinds, and honey is somewhat neglected. However, some shipments of the new crop have arrived, showing good quality, and there is yet some old crop on hand. We are selling some of each every day, and the indications are encouraging that a good demand will exist later on, and this market offers good inducements to those who have choice honey to ship Although values are by no means settled, we now quote new 1-lb. fancy, 11@12; old fancy, 11@12; A No. 1, 10@11; No. 1, 9@10; old amber or dark, 6@8; new amber or dark, 8@9. Extracted, in barrels or kegs, white new, 6@6½; dark, 4@5. Beeswax, 26@27.

A. V. BISHOP & CO.,
Aug. 11. Milwaukee, Wis.

ST. LOUIS.—We are glad to report a good demand for honey, especially on the better grades Stock of choice in this market very light, and would advise prompt shipment. We think the probabilities are that prices are better now than they will be later in the season. One-pound fancy white comb, 9@11; amber, 8@10; dark, 6@8; extracted, white, in barrels, 5c; in cans, 5½; amber, barrels, 4½, cans, 5; dark, 3½@4. Beeswax, easier, 24@25½.

WESTCOTT COM. CO.,
Aug. 13. St. Louis, Mo.

PHILADELPHIA.—Honey has commenced to arrive more freely, and is of very good quality. Fancy comb, 14½; A No. 1, 13½; No. 2, 12; amber, 10. Extracted, white clover, 8; light amber, 5@6; amber, 5. Beeswax, 27. We are producers of honey; do not handle on commission.

WM. A. SELSER,
Aug. 19. 10 Vine St., Philadelphia, Pa.

DENVER.—Our honey market is improving in quantity of stock being shipped in, but not in price. We can quote the best white comb at 10 cts. This is the trouble every year: The farmers ruin the price of honey by offering it so low. They could just as well get a better price; but they get what they ask, and are satisfied. Can quote extracted at 6c.

R. K. & J. C. FRISBEE,
Aug. 12. Lock Box 1014, Denver, Col.

SCHENECTADY.—From advices received, the crop of honey in New York State will not be nearly as large as last season, and prices will doubtless be somewhat higher. However, as honey is more of a luxury than a necessary article of food, when prices go above a given point the demand decreases accordingly. We quote white at 10@13; buckwheat, 8@9, according to quality and style.

CHAS. MCCULLOCH,
Aug. 20. Schenectady, N. Y.

COLUMBUS.—The producers of honey in this vicinity have no crop this year. The little they will have to market will be dark and of very poor quality. We will be in the market for consignments or direct purchase, as soon as weather becomes cooler. Can use carload Western white comb. Any one having same, correspond with us.

THE COLUMBUS COMMISSION & STORAGE CO.,
Aug. 18. 409-413 N. High St., Columbus, O.

KANSAS CITY.—We are receiving a few shipments of new comb and extracted honey. The demand is very good for this time of year. We quote fancy white comb, 13@14; No. 1, 12@13; amber, 11@12; extracted, white, 5¼@6; dark and amber, 4½@5. Beeswax, 22@25.

C. C. CLEMONS & CO.,
Aug. 23. Kansas City, Mo.

BOSTON.—New comb honey is now coming in; and while the demand is not brisk, owing to the warm weather, it is being well taken. We quote, fancy, in cartons, 13; A No. 1, 11@12; No. 1, 10@11; No. 2, 9. Very little California extracted on hand, at 6½@7½; Florida now arriving, and selling at 5@6; white clover scarce and wanted. Clover honey, both comb and extracted, sells best in this market.

Aug. 18. BLAKE, SCOTT & LEE, Boston, Mass.

MINNEAPOLIS.—Receipts of comb quite heavy, and is selling at 10½@11 for fancy white comb. Comparatively no extracted, so is very good time to ship. White extracted would bring 6c—possibly little more.

S. H. HALL & CO.,
Aug. 17. Minneapolis, Minn.

BUFFALO.—New honey coming in rather freely, and selling at 11@12c for choice to fancy white clover.

W. C. TOWNSEND,
Aug. 28. Buffalo, N. Y.

NEW YORK.—There is good demand for new crop comb honey, and it is beginning to arrive. Have made some sales at 14@15c for fancy white, 12@13 for No. 1 white, and 10@11 for fair white. No buckwheat on the market yet. Extracted in good demand at unchanged prices. Beeswax dull, and 26@27 is top.

HILDRETH BROS. & SEGELKEN.
Aug. 26. New York.

WANTED.—All the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa-clover-honey Cough-drops, and their 48-page illustrated honey-recipe book, "Food Value of Honey," with handsome lithograph cover. All mailed for 10 cents in stamps or silver. Representative wanted in every State and country to sell these drops. Write for wholesale price. Sample box sent for 6 cents. R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

CHAS. ISRAEL & BRO.,
486, 488 & 490 Canal St., Corner Watts St., N. Y.

Honey and Beeswax.

Liberal Advances made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.
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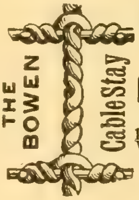

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
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VOL. XXVI. SEPT. 1, 1898. NO. 17.

STRAY STRAWS FROM DR C. C. MILLER

BEE-KEEPING is a regular trade in Hannover, Germany. The professional apiarist serves as apprentice two years, then he is ready for a situation with a farmer who owns bees.

HAM SMITH, p. 627, reports five yields running from 1000 to 2000 pounds. If that means per single colony, it's a big thing. If each of the five men had 100 colonies, and their total yield is given, it's rather poor.

THE OTHER DAY I counted on one comb eleven cases in which the queen had laid eggs in cells containing pollen. In all other respects she seemed to be a respectable queen. [I wonder if Mr. Doolittle would think this was "Nature's plan."—ED.]

BRITISH B. MANN sends me the following summer drinks: *Honeyed Buttermilk.*—One spoonful honey to three-fourths glass buttermilk. Stir well, then add as much soda as will lie on a dime. *Honey Pick-me-up.*—One egg well beaten in a pint of cold milk, with one tablespoonful honey added.

BARON BELA AMBROZY reported at the big German convention last year that, by feeding honey with 50 per cent water, and afterward with 30 per cent, he got no satisfactory results; but by using pure honey he got 3 pounds of comb for every 4 pounds fed. Doesn't that differ from reports in this country?

R. C. AIKIN is just as level-headed as can be in that article on p. 612. Instead of shipping off and selling at a loss what your home market won't consume, lower the price so your home market *will* consume all. Of course, sell where you can make most; but if there's any favoring to be done, favor those near home.

A WRITER in *Le Rucher Belge* thinks many of the fully matured young bees dragged out of the hive dead owe their death to the fact that they were wrong end to in the cell, resulting from their not being able to change position in time for their metamorphosis. Could that be a result of weakness?

IF C. GROSS, p. 626, had said he found the clipped queen with the swarm when he first found the swarm, it would have been a very unusual case. Finding it in the hive next day was not so unusual. I've had more than one case of the kind. A neighboring colony swarmed, and the clipped queen went into the wrong hive.

REPORTS from England and Europe as well as this country make out few good honey-yields. Unusual complaints are made as to the amount of honey-dew. Don't honey-dew and poor seasons largely go together? If good honey is present, don't the bees neglect the honey-dew, and carefully gather it when there's nothing better?

SOME ONE SAYS bees gather more pollen early in the day because later it is so dry the pollen doesn't pack well. A. Wathelet, editor *Rucher Belge*, says bees with loads of pollen carry little honey; and, when honey is abundant, carriers of pollen are scarce, all being intent upon honey. According to that, bees let up on pollen as the day advances, because nectar flows more freely.

WHEN A HIVE IS RAISED on four blocks, not only do all the bees that are used to the front entrance continue that, but all the later-hatched young bees follow their example. There are occasional exceptions. Years ago when I left an opening at the upper part of the hive at the back end, I'm not sure there was ever a case in which the bees used this opening as an entrance.

ACCORDING TO Bro. Doolittle, page 624, Nature's plan is to have eggs in the brood-nest placed "in the *center*, always." Then when a queen varies from Nature's plan when left to herself by putting eggs all around the outside of the brood, Bro. Doolittle, will you please tell us whose plan *that* is? [Do bees ever perform any work "always" in the same way? There are *general* rules in hive economy, but no invariable ones. Am I not right, friend Doolittle?—ED.]

ABOUT NOW is time to repeat again that people *can* be educated to buy candied honey and know what to do with it. C. F. Muth succeeded in building up a big trade that preferred honey in the granulated state. Then there are more people than you might suppose who really prefer honey candied. This week there was at my house a young lady who refused the finest comb honey, but would eat her share of candied extracted. [That's right—keep the ball rolling.—Ed.]

A common notion seems to be that clipped queens are superseded sooner than others. Isn't that because you can always tell when a clipped queen is superseded, and with whole wings you can't easily tell whether there has been any change? If the average age of queens is three years, then a third of the queens are superseded every year. [That "common notion," like many another common notion, is not founded on facts. Queens clipped or not clipped live out their best usefulness in three years, and some think in two.—Ed.]

On page 628, mention is made of Hutchinson using sections 1½ inches wide, as if that were unusually narrow. I understand they were used without separators, making comb the same thickness as sections 1¾ with separators. If they were used with separators, then the thickness of the comb was 1 inch, or ⅛ to ¼ inch narrower than bees naturally build them. [The width 1½ is narrow when compared with 1⅞, the standard width for the United States. As to the natural width of comb—what is it? Some say ⅞ inch, some 1¼. But there is another point to be considered. Is it not true that combs one inch thick or less will be filled and capped better and quicker than combs 1½ or 1¾ in. thick?—Ed.]

W. Woodley, the able contributor of *British Bee Journal*, has no use for a section-cleaner, because his sections "*are never made dirty*, so that no scouring or cleaning is required. Bee-keepers may save a large amount of labor if they are careful and clean in all their work in the apiary." But, friend Woodley, it isn't I but the bees that dirty the sections. Either your bees do differently, or else your market doesn't require as clean sections as our markets. [There is a vast difference in markets as well as in localities. In my occasional "travels" among bee-keepers I notice that, in one locality, there may be comparatively little propolis-daubing, and in another there is considerable. In one locality propolis is red, and in another brown and dirty-looking. There is also a difference in *bees*. Carniolans deposit the least; Italians next; blacks and hybrids next in order, and Punics or Tunisians the most of any.—Ed.]

A new boy at school has to run a sort of gantlet till the others find what stuff he's made of. Same way with bees, in a time of scarcity. Set a hive in a new place, add a fresh story, or make almost any change, and the robbers will try to enter the smallest crack, while right beside it stands a colony unmolested although having plenty of big leaks. ["Plenty of big leaks?" That reminds me that on this point, at least, the doctor *knows* what he is talking about. "Big leaks"—why, his hives have 'em all over—dilapidated lot many of them are. There, doctor, I didn't mean to give you away quite so badly; but it's only fair to say that you have been hanging on to a lot of your hives (twenty or thirty years old) with the intention of superseding the whole lot just as soon as you find a hive that suits you to a dot. I don't blame you for taking time to look over the field carefully. Say, supply-dealers, here is a chance to show the doctor the "only ideal hive."—Ed.]

GENERAL CORRESPONDENCE

SELLING DARK HONEY.

BY MRS. L. HARRISON.

This week I visited an apiary two and a half miles distant from ours, located in much better bee-pasture, as all the adjacent land is occupied by market-gardens. There is also land subject to overflow from the Illinois River, within easy flight of the bees. On entering the house I noticed upon a table a dozen glass jars with tin covers, holding about one gallon. These jars are usually used to hold candy in stores. The color was like that of strong coffee, and my curiosity was excited. In reply to my query, "What have you in those jars?" the lady said, "*Honey*."

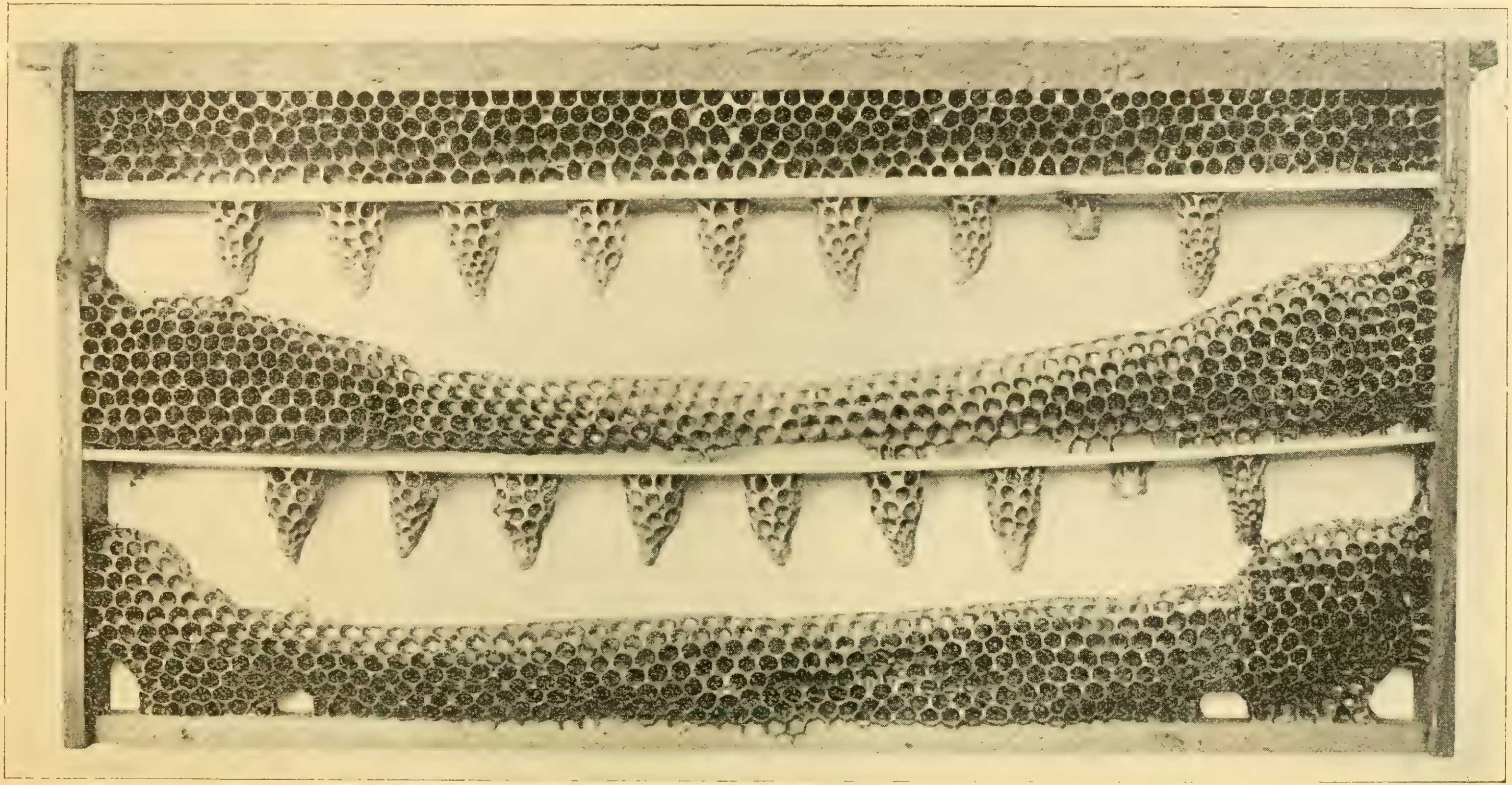
I never saw such stuff as this before. She said, "The combs were built crosswise of the sections, and some were bulged so I could not pack them. The straight nice ones are in those cases."

On cutting some of the comb I found it was tough and thick. She said, "Look at that box-elder. Some mornings you would think there was a swarm there, they hummed so among the leaves; and the lilac-bush beneath shone as if the leaves were varnished. That grove of oaks there had honey-dew also."

Putting this honey-dew upon the market will be an injury. Many persons think that bees make honey; and if they eat some of this they will come to the conclusion that they do not want any more. If extracted, cigar-makers might use it, or printers could use it in their rollers. If I have honey-dew I will feed the bees upon it another spring, to rear brood.

BEESWAX.

This lady showed me her wax. From its appearance I judge that it had been boiled in water too much, and then heated too hot. For those who keep bees in a small way, and have only a small quantity of wax, there is no better way than to put the scrapings of hives and sections in an all-metal sieve; set it over a pan of cold water, and put it in the oven of a cooking-stove. As it melts it runs down into the water; and if the oven is very hot, change it to another pan of cold water. In this way light-colored wax is the result. I don't want the water in the pan to boil. If the first pan is removed, and the second should be forgot-



QUEEN-CELLS FROM ARTIFICIAL DOOLITTLE CELL-CUPS; A FAIR SAMPLE OF WORK DONE AT THE HOME OF THE HONEY-BEES.—SEE EDITORIAL.

ten, boil over, and waste, the best wax would be in the first pan. Sometimes a third pan is used; and when the residue is dry I scrape it from the sieve into a paper, roll it up, and keep it for kindling the fire. I never let bits of comb and scrapings accumulate; but when there is a convenient time, I melt them up.

When I remelt those cakes taken from the pans of water I put them into a pan placed over a kettle of boiling water, and, when melted, strain through cheese-cloth tied over a fruit-can that has had both ends removed. Set this in a basin, pour through, and have the cakes of one size. I sell three pounds for a dollar to those who sew carpets, manufacture overalls, etc.

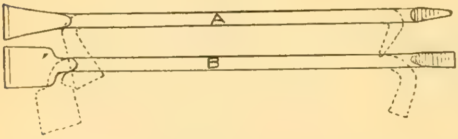
Peoria, Ill.

[Mrs. H., you have given us an idea that is at least new to myself—that is, using the residue, after the wax is extracted, for fire-kindlers. We have barrels of it from our wax-room; and after we get all the wax we can by using steam we put it into the sun wax-extractor. After the sun has done its best we have been in the habit of putting the refuse under the boilers, to make steam. But if made into little balls, handy to put into the stove, I think it might be splendid for fire-kindlers.—A. I. R.]

PRIES, SCRAPERS, AND DRAWN FOUNDATION.

BY J. W. SOUTHWOOD.

While the subject of pries and scrapers is before the minds of the readers of GLEANINGS I will give a description of the kind I have been using for several years, and which I like quite well—better than any others I have ever seen. The pry is made of a steel rod 14 in. long and ⅜ in. thick. It is flattened till it is ¼ in. thick and ½ wide. One end is made wedge-shaped, and is ⅞ in. wide at the end. The other end is also made wedge-shaped, and is only ⅜ in. wide, and rounded at the end as shown in illustration. I find this one of the handiest tools I use in the apiary.



My scraper is made of the same kind of rod, and of the same length and thickness, and left round, except the ends, which are both flattened wedge shape, the same as the pry, except that the wide end is shouldered as at B. It is ⅞ wide; but as we now use brood-frames an inch or a little more, I think 1 inch or 1⅛ would be better. The other end is made ¼ in. wide, and ground on the edges so as to leave sharp right-angled corners. Each end is then bent in shape like a hoe, and kept sharp by filing as a plane-bit is ground. If given the proper slope it will scrape propolis as a plane dresses a plank. The narrow end is just right for cleaning the tin rabbets on which the brood-frames are hung. The sharp edges clean the sides of rabbets.

I will not attempt to give the uses of these tools, but will say the apiarist who has them will soon find much use for them.

The drawn foundation you so kindly sent me arrived a little smashed I will give it a test, and report. I did not get the sample last season in time to give it a trial, so I am now testing it. Without waiting to test the sample just received I will say I am quite pleased with it. If the two objections I offered against the last season's sample — namely, flat base and too high cell-walls—have been removed it will be better. I have never thought enough of flat-base foundation to give it a trial. I am quite sure we want a natural base, and I think all we want in the height of cell-walls is just enough so the bees will readily accept it. Of course, I mean when conditions are all favorable. I think ⅛ or 3/16 is all that is necessary to accomplish this.

I think we should all feel grateful toward you and Mr. Weed for your great effort, arduous work, and financial expenditure in accomplishing that which I confidently believe you view as one of mutual benefit.

Monument City, Ind.

RAMBLE NO. 151.

How to Use a "Jouncer."

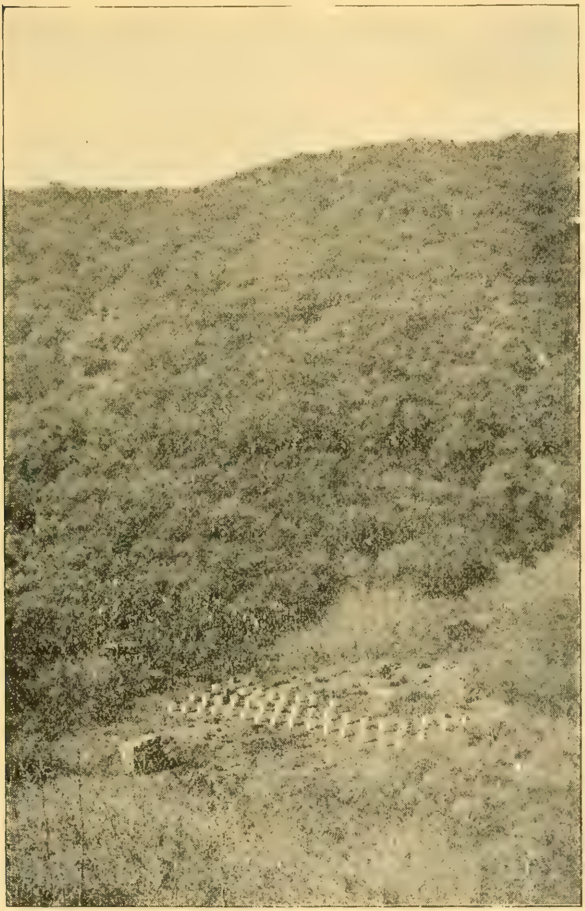
BY RAMBLER.

While the State Bee-keepers' Association was in session in Los Angeles in January the members expressed real pleasure in meeting Mr. Thos. Wm. Cowan, editor of the *British Bee Journal*, and the Rambler tried to be just as sensible as the rest in that respect. Mr. Cowan sojourned several days in the city; and soon after the meeting adjourned, he, Mr. C. A. Hatch, Mr. M. H. Mendleson, and the Rambler enjoyed a day's ride along the hills that border the Cahuenga Valley and out toward the ocean. A plentiful supply of water has been developed in these hills, and is used largely in the development of market-gardens. Scores of Chinamen are seen laboring, and the succulent vegetables find a ready market in the city.

Along these hills we have one of those remarkable California features, the frostless belt. While in the city near by, or in the lowlands before us, there are killing frosts, here is a belt close to the hills where tomatoes and other tender garden vegetables can be grown the year round.

After riding through this beautiful garden country we pass through the extensive gardens, pass the residence, and enter the canyon owned by Mr. Durfee. At the extreme upper end of the canyon we find the Rambler's apiary. This apiary is only an embryo of what is anticipated; but instead of telling what is proposed I will explain some old and new features while the rest of my companions are having their lunch and a bee-keepers' picnic in the shade of an oak-tree, and near one of those tunnels that have been driven into the mountain for the development of water, water, beautiful water.

Of the forty-one hives shown, ten are in the Hoffman frames and the rest are in the Heddon hive ; and here it may be just as well for me to state just what my feelings are upon the hive question. Before leaving my Eastern home I had tried several styles of hives, and had finally worked up to 100 Heddon hives, and had better success with them than with any other hive I had used. Up to that time I had never used the L. frame; and if I had, perhaps I should have had the same success, or I might have had the same success with the later Hoffman hive and frame.



RAMBLER'S APIARY.

Since I came to California, seven years ago, I have managed bees in a great variety of hives; and through all of the experiences there has been a hankering for the trial of the Heddon hive on this coast; so when I commenced to collect an apiary of my own it was but natural that I should give that hive the preference ; this preference with me is probably as deep-seated as is Doolittle's for the Gallup frame, or Dadant for his jumbos, or Sam Green for his box hives. We all have a certain measure of success according as we have learned to handle our hives.

My apiary is something on the experimental order; for, aside from the Hoffman hives, I have two sizes of the Heddon, the regular eight-frame, and later I have constructed quite a number containing ten frames. By storifying the latter I can make a veritable jumbo hive.

There must be a limit to the size and shape of the frame we use; but the bee-keeping fraternity will probably never agree as to the exact size.

The Langstroth frame, or frames of that dimension, undoubtedly give the most universal satisfaction. Some of us, however, think we find an advantage in using a different size, and I have seen extracting-supers with frames even smaller than the Heddon; and, on the other hand, there are frames so large that it is troublesome work to shake the bees from them. While I can use the L. frame, and like it, I have several reasons for preferring the shallow fixed-distance super; and I am quite sure I would use them even upon a jumbo brood-chamber; but in this article I wish to call attention to only one feature that embodies a new plan for clearing the super of bees.

I have never taken kindly to brushing bees from the combs when extracting, and have tried to devise means to overcome it. I have given the Porter bee-escape a thorough trial, and, while it works fairly well, it is not rapid enough. We have to wait several hours for the bees to escape. Place the escape on at night and the bees are out in the morning, provided there is no brood nor queen in the super. In that case we have to resort to the brush in spite of the escape. In this State the nights are usually so cool that the honey gets cooled off before morning, and it does not flow from the comb as freely as when taken from the hot hive. What we need for making the bees escape is something that will act immediately.

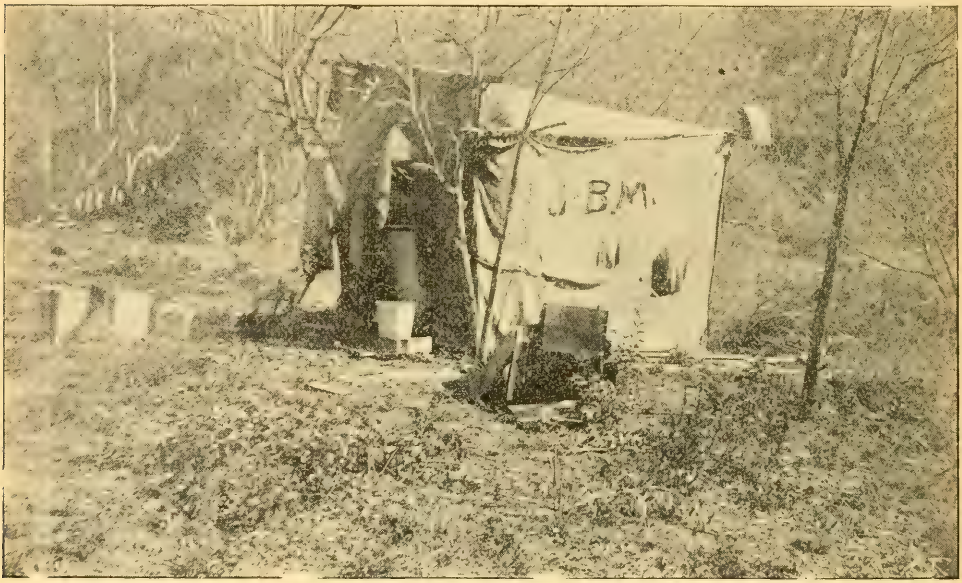
In the use of the close-fitting shallow super, I have devised and successfully used what I term a *jouncer*. When we shake an ordinary frame a good share of the bees are thrown off. If the comb is old and strong, and we jounce the frame against a solid object, nearly all of the bees will go off, and the comb is not damaged. I apply the same principle to the shallow extracting-super. A little smoke when the cover is lifted drives a good portion of the bees below. Now remove the super and place it in the apparatus shown in the cut, and jounce the ends on the ground, and the remaining bees rattle out upon the little sheet provided to catch them. In order to prevent the jouncing operation from breaking combs, the lower ends of the end pieces are cushioned with numerous folds of gunny sacking. This relieves a too sudden jar, and at the same time gives shock enough to send the bees out.

I have used this device upon supers in which were new combs filled with honey without breaking them. Several supers are operated upon, and immediately taken to the extracting-house. It takes a little more time to uncap and extract, but the time lost here is gained in the yard, and I prefer to spend the most of the time in the shade.

I have never tried the jouncer on the Hoffman hive. The only objection to its successful working would be the heavier weight to jounce, and the more danger of breaking the deeper combs.

I did not show this apparatus to my friends, for it was such a crude thing that I was ashamed of it. I promise that, when they visit me again, a perfected one will be on exhibition.

The honey-house on my ranch could not be hidden ; but of this I was not ashamed, for there are scores of them in this State. This style is made by applying a few widths of gunny sacking to a few rough poles and young growth of trees, and then we have a house, although at the close of the season it looks the worse for wear. One of the things that will hereafter be found in this apiary will be a new and unique portable honey-house, an illustration of which will appear later.



RAMBLER'S HONEY-HOUSE.

The three good friends who were with me did not discuss to a great extent the hive I am using. Evidently there were fixed opinions in the little group ; and to illustrate a point, Mr. Cowan related an incident that happened to the hive a few years ago when he was a guest of the inventor.

Mr. Heddon was about to show how easily he could shake all of the bees from the brood-chamber at once, when, with the first shake, bees, brood-combs, and all went to the ground.

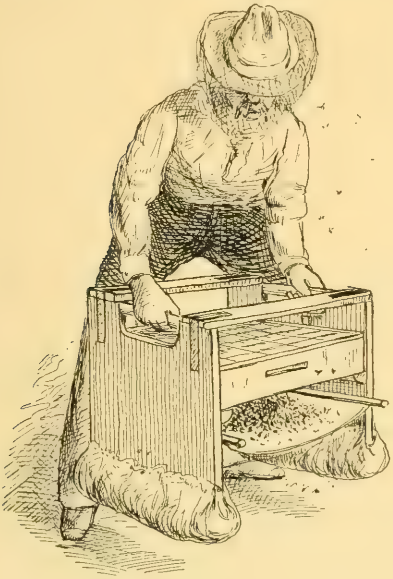
While the accident happened through a faulty support of the frames, Mr. Cowan's rendering of it showed a certain amount of British stiff-neckedness in relation to the hive, and Mr. Hatch laughed as though he had the same style of neck too. Mr. Mendleson's neck seemed to be more pliable. He is using the Danzenbaker hive, and is open to the adoption of improvements. Getting the bent of these fellows, I did not show them my jouncer. Their necks would have been dead set against that also.

In spite of rigid necks we had a pleasant outing; and after examining the tunnels, and drinking the pure water that comes therefrom, we visited Mr. Levering's apiary and then returned to the city.

A few days after our delightful drive in the

Cahuenga I suggested to Mr. Cowan that we make a sort of international alliance, make a sortie on Florence, in the suburbs of the city, and capture bee-keeper C. W. Dayton. I knew we should find quite a number of valuable improvements here that might be of use to us.

The British (Mr. Cowan) had command of the artillery, and carried the rapid-fire magazine battery (camera) slung over his shoulder. The American force (that's I) had command of the infantry and the skirmish line. We made a rapid descent on Florence by rail, and captured the station with ease. We deployed our forces up the railroad track, about half a mile, and made an easy capture of the Dayton residence. C. W.'s mother was the only occupant. We were courteously treated by this lady, and found her to be one of those good American mothers, well posted upon all of the affairs of the day; and from her manifest knowledge of bee-keeping I have no doubt she could manage an apiary with almost as much success as her son. She had no objections to our capturing C. W., and even gave us the information that he was building a new fortress just a few rods down the street.


RAMBLER'S JOUNCER.

As we deployed our forces under cover of several houses and a fence, Mr. Cowan thought the capture would be easy, for he saw a man at work on the identical fortress when we were marching up the railroad.

We made a gallant charge through the fence and field. The British unlimbered the artillery ready for action, while the American skirmished ahead. But the man we thought sure to capture had evidently abandoned his fort and retreated. We surrounded the entire fortress, and instituted a thorough search. I glanced into the little shop. The plane and the saw were there, but they were silent. There was no pusher behind them. After a further search we were about to withdraw our battallion when I thought it would be a good plan to look into that big honey-tank which was standing a little to the rear. I thought there was a faint noise proceeding from it. The British artillery was again ready for action. I silently approached, and, getting on my tiptoes, I peered into the tank, and, lo and behold!

BULGING OF HONEY IN SECTIONS.

What Part does the Separator have in the Matter?

BY DR. C. C. MILLER.

In a footnote on page 546, Mr. Editor, you say there is bulging at the upper part of the comb if the separator is ¼ inch lower than the top of the section. If I'm not mistaken, in the fence separator the space between the slats is 6/36 of an inch. If the separator comes ¼ (9/36) of an inch below the top of the section, and we deduct from that 9/36 the thickness of the wood in the section, which is 4/36 or more, we have left, as the actual space to effect the bulging, 5/36 of an inch (less if thicker sections be used). Now if 6/36 will not allow bulging at the middle of the section, will a space 1/36 of an inch less at the top cause bulging? Possibly you may reply that bees are more inclined to bulge at the outer edge, and at any rate you tell me that you have samples before you that prove your contention, and it's hard to kick against actual facts.

I have wondered just a little whether your samples were not exceptional. I've skirmished around to find what few sections I could, and none of them show signs of bulging at top, although the separator was ¼ inch below the top of section. I don't lay very great weight on this, for the number is small, and there might be something exceptional in the case. But I do lay great weight upon the fact that I've had thousands of sections produced with the separator ¼ inch below the top of the section, and there has been no trouble about handling them. You probably know better than I that tons upon tons have been produced by others in the same way. With the plain section and fence, the top-bar of the section comes 8/48 (2/12 of an inch) from the plane of the separator. My old-style 1⅞ sections have a top-bar 1½ inches wide; some of them, 1⅜ wide. That makes the top-bar of the section come respectively 9/48 and 12/48 from the plane of the separator. That is, my top-bars are practically 1/48 and 3/48 narrower than yours. Now, if mine work all right, why not yours? for, according to the figures, mine ought to make the more trouble. Don't tell me that mine are not handled by the narrow part of the top-bar, for they are, and in lifting a first section out of a case you can't possibly handle them in any other way.

Suppose, however, that there should be bulging wherever the separator is lacking opposite the comb, does that make it necessary to have the separator go any higher than the comb goes? Surely the bees will not bulge the top-bar, and if the separator comes within ⅛ inch of the top of the section that ought to satisfy all your fears. Great stress is laid upon having spaces in the separator for the sake of freer communication. Please don't fail to have as free communication as possible at the top as well.

I had hoped to settle this question and some others by experiment, but the utter failure of the honey harvest prevented.

ARE FENCES MORE EASILY CLEANED THAN PLAIN SEPARATORS?

A footnote, p. 546, says that all that needs to be cleaned in the fence is the cross-cleat, or that part of the fence that comes in contact with the section. I remember when that idea first came to me, and I was very much pleased with the thought that only the part that touched the section needed cleaning, making it easier to clean than a plain separator. After some time it dawned upon me that it was also true that, in the plain separator, only that part needed cleaning that touches the sections —same cleaning in each, leaving the question, "Is it easier to clean a given amount on a plane surface, or on a surface raised at intervals?" Lay a plain separator on a table, and with the same sweep of the hatchet you strike two or three of the places to be cleaned; whereas, with the fence each cleat comes in for separate treatment. I suspect when you try the two kinds side by side, as I have done, you'll think you can clean plain separators in less time than the others.

ARE FENCES CHEAPER IN THE LONG RUN THAN PLAIN SEPARATORS?

"I believe the doctor once said he threw away his separators every year. Now, if he buys new ones I can not see but they cost a good deal more than fence separators that would have to be bought only once." That's what you say, Mr. Editor, on page 546, and I can hardly see how you could say it if you had carefully read what I said about fifteen lines higher up the page. Let me repeat: "A uses plain separators, and cleans them every year. B uses fences, and cleans them yearly. Plainly, A has the more economical plan of the two. Now, if I can do better than A by buying instead of cleaning, and A's plan beats B's, how under the sun can B's plan beat mine?" You pay no attention to the question asked, but merely repeat what you had said more than once before, that it must cost more to buy plain separators every year than to buy fences once for all.

Let me make just one more effort, putting the matter in a little different form. I can not clean separators of either kind for less than $2.00 a thousand. I can buy plain separators for less than $2.00 a thousand. Which will cost more, to clean fences every year, or to buy plain separators every year?

THE DEFINITION OF THE WORD "SECTION."

A while ago I insisted that the word "section" could be properly used as meaning the piece of honey contained in the section box. Months ago I wrote the publishers of the Standard Dictionary, asking them to expunge that definition, and have been intending ever since to recant in these columns. "A pan of salt" and other things were thrown at me to make me change my view, but such things as were said had really little bearing upon the subject except the plain statement that the word was not properly so used; and when all who said any thing about it said the word was *not* correctly used in that way, that settled it. I had no right to take a local use of the word as against all the world. But, as I have said, the kind of argument used had little bearing. You can't always decide by reasoning how a word is used; you must simply take the usage itself. Because the word "pan" does not mean salt when I say "a pan of salt," it does not follow that, when I say "a lot of land" the word "lot" may not mean "land," for it does, as when you say "a city lot," or "a wood lot," and the dictionaries, ancient and modern, will sustain such definition. The same kind of reasoning would rule out the common use of the word section among bee-keepers, and insist that it must always be called "section box." But it is right to call it section, just because that has become universal usage. It would be a good thing, however, if a little more reasoning were used in establishing usage.

Marengo, Ill.

[My footnote was based largely on two or three small lots of honey in old-style sections, that had come from Mr. R. C. Aikin, of Colorado, some of which was in the original crates just as it came from the hive. I noticed that his separators dropped down ¼ inch, and that in many instances combs were bulged beyond the wood near the top edge of the section. In addition to this, even in our own apiary years ago I noticed that honey was inclined to bulge out this way. Accordingly, separators in our hives for the trade for the last two or three years have been made to come flush with the top edge of the section.

I believe this bulging over the top of the separator, where it drops down ¼ inch, is largely a matter of locality and season. But the point I tried to make was this: That there were certain conditions (when separators are dropped ¼ inch) under which bees would bulge comb honey over the top of the separators, and that, therefore, we should have our separators so arranged that there could be no bulging at any time under any conditions — that is, if we could do so just as well. What might not be any serious annoyance in and around Marengo might be quite a serious one in other localities; and when *plain* sections are considered, this becomes a very important point.

The doctor raises the point that, if the bees will not bulge the honey opposite the spaces between the slats of the fences, why should they do so in the small space just above the separator dropped down ¼ inch? The condition here, doctor, it seems to me, is not quite the same. Bees are more inclined to bulge at the point of attachment above than elsewhere. See?

There, now, doctor, you have brought up

that old bone of contention again—the cleaning of fences and separators. I very much doubt whether the fences will have to be cleaned as often as the plain separators. In fact, we have a letter in hand now from a correspondent who says less propolis is deposited on the edges of plain sections and fences than on the separators and bee-way sections. He does not give the reason; but I assume that, inasmuch as there is freer communication from side to side and from section to section, the bees do not seem to have the notion that they *must* seal each individual honey-box into a compartment by itself. If they would once begin the process of plugging in glue, they would have a job on their hands. Now, please do not put me down as saying that this is a positive fact. I do not *know* that this would be true in all cases.

But to get back to the original question, let us assume that the fence will be glued up as much as the separator. If it costs you $2.00 a thousand or more to clean the old-style separators, I would employ some girl or boy to do it by the piece. Suppose the boy were given a rate whereby he could earn eight or ten cents an hour; I would guarantee that he would clean your fences for a good deal less than $2.00 a thousand if he did it by the piece or by the thousand. But let us assume that it would cost just as much to clean plain fences as separators. The only difference would be the difference in first cost of fences over separators.

But I suspect that we had both better wait until we have an opportunity to test the cleaning of separators and fences.—Ed.]

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of C. N. White.

Our bee-garden picture shows the apiary of Mr. C. N. White, and is situate in the village of Somersham, Hunts., in which place he has resided for the past eighteen years. In response to our request for a few particulars regarding himself and his work to go along with the picture, Mr. White says:

"My first lessons in bee-keeping were taken from my old friend and schoolmaster, Mr. Winter, of Caistor, Lincs., with whom I lived while apprenticed as pupil-teacher. Here, twenty-eight years ago, I first saw bees kept on a humane principle, for my *bee-master* (though hardly progressive or scientific enough to fairly give him a claim to that distinctive title) preferred an economical as well as humane system of bee-keeping. From 1875, when I left college, to '79, when I settled at Somersham, I was gleaning information on bees, and learned much from Mr. W. B. Jevons, of Market Rasen, who was then an expert bee-keeper. Here, then, I formed the nucleus of an apiary that eventually became my pride, and did not lack the admiration of friends. The work and worry inseparable from scholastic duties in a rural school of 250 children at first prevented me from doing very much with the bees; but since I have been able to turn to the hobby in grim earnest, I have by practical work and by the use of my pen endeavored to show other rurals that bee-keeping is a source of interest and profit, and tends to promote good health and the power

APIARY OF C. N. WHITE.—FROM BRITISH BEE JOURNAL.

to work hard. For myself and the benefits it has conferred in this line, the multiplicity of duties I have performed and still attend to, fairly well shows."

Few will dispute Mr. White's claim to be called a worker when we learn that he is Hon. Sec. Hunts. and Cambs. Teachers' Association, and in this capacity has been representative at annual conferences of teachers in London and elsewhere. He is Hon. Sec. Hunts. B. K. A. and of the Cambs. and Isle of Ely B. K. A., while locally he is secretary to trustees of local charity, Hon. Sec. Technical Education Committee, collector of taxes, church choirmaster, conductor of concerts, is correspondent of five local weekly papers, and writes bee-articles for ever so many other papers besides.

Bee-keepers also know that Mr. White has done a very great amount of bee-tent lecturing during his annual holiday from school duties; and when he coolly tells us that "the above are my means of recreation from school work," it almost makes one wonder when or during what hours he lies down to rest. Solid testimony to the value of the disinterested services he has for many years past rendered to his neighbors is found in the public recognition of his labors on several occasions, when testimonials have been presented to him by the leading residents of his neighborhood.

In concluding this brief notice we may mention one event, viz., the public presentation to Mr. White of a gold watch and illuminated address in 1895, on his fortieth birthday, to mark his sixteen years' services to the locality. On this occasion, when returning thanks for the honor done him, he alluded to the fact that in all his work much of the success he had been able to achieve was due to his good wife, and the possession of a happy home—sentiments in which we are sure our readers will cordially agree.

Mr. White holds the first-class certificate of the B. B. K. A., and frequently officiates as judge at bee and honey shows. Indeed, he may be very fairly classed as one of the public men of the bee-keeping craft.—*British Bee Journal.*

PLAIN SECTIONS A SUCCESS.

Require no Cleaning; Fences Could be Improved a little; Blacks inferior to Italians and Hybrids.

BY E. W. BROWN.

Here is my report on the new fence. I have used about 600; a few I and T fences, but the greater part being my special fence you made to go in the Hilton T super, three sections on a slat.

The kind of season we had this year for clover is the kind in which the Italians and hybrids store some surplus, while the blacks store nothing till basswood comes. As basswood did not amount to a great deal this season, the black bees stored but very little surplus. I got 48 well-filled (15 ½-oz.) sections to the colony from 40 Italian and hybrids, there being more or less Carniolan blood in my hybrids. This was white-clover honey. From 10 black colonies I got no white clover, but about 12 sections of basswood per colony. While the black bees were working on basswood the other bees continued to work steadily on white clover. My best colony gave me 96 well-filled sections and 20 pounds of extracted. This colony has an Alley queen, bought in 1896. She has always been in a 10-frame hive, and has never swarmed, always coming in at the lead for surplus honey. I received two queens from Alley at the same time—the other one proving to be absolutely worthless.

Well, well! I started out to report on fences and plain sections, and haven't said a thing about it yet. According to my opinion the fence is a success, but can be slightly improved. The plain sections are a perfect success in every way, and with me they have required no cleaning when filled during the white-clover flow; and I feel assured that they will require very little cleaning when filled with fall honey, which is the time the bees gather the most propolis. This thing alone—the fact that no cleaning is required—is sufficient reason for me to adopt the fence and plain section altogether.

The improvement I would make in the fence is to make the cleats wider than ½ inch, and to extend the cleat to the bottom and top of the fence. My bees say they do not care for this passageway over and under the ends of the cleat. Just as soon as they get a little crowded for storage room, and begin to finish the outside and corner sections, they begin to block up this opening over the end of the cleats. The reason I would make the cleats wider is because, in many instances, the edge of the cleat comes very nearly even with the inside edge of the section, in which case the bees often round the cappings up to the fence so that, in taking out the sections, the outside row of cappings is broken. I notice this very little in using the I fence, but with my special fence I notice it a great deal because the bees cap the honey all around next to the wood, filling the section better than they do with the I fence.

I see you figure on having the bottom edge of the fence about ⅛ inch above the inside bottom of the section. This is all right if we do not want the surplus arrangement queen-excluding, and I think the top edge ought to be the same distance below the upper inside edge of the section. Some of the fences you sent were this way, and some were almost as high as the top of the section. In no case did I have any bulged combs. Now, as I hive my swarms on half-depth brood-chambers (less than 6 inches deep), could I not get along without queen-excluders if you made my fences with the bottom edge almost on a level with the inside bottom of the section? This is what gave me this idea: I happened to drop a quart of bees with a queen on top of an Ideal super, and the bees immediately descended to the hive below the super, while the queen was left trying to squeeze in between the sections and fences, but could not do it. This set me to thinking, "Why not

AHOKIA VALLEY APIARY

DISPLAY OF LOUIS WERNER, EDWARDSVILLE, ILL.—SEE EDITORIAL.

have the bottom edge of the fence so adjusted as to be queen-excluding?"

Eden, Erie Co., N. Y., Aug. 6.

[We can; and if the rest of the fraternity think well of it we will adopt your suggestion.—ED.]

THE INVENTOR OF THE QUEEN-EXCLUDER.

His Giant Hives and Queen-cages, etc.

BY F. GREINER.

In his Straws for July 15, Dr. Miller makes mention of the inventor of the queen-excluder, Fr. A. Hannemann (wrongly spelled Hahnemann). This brings to my mind vividly what Mr. H. wrote in the German papers during the years 1875, '78, '79, about this invention and the general management of his bees; and although about twenty years have passed since then, what he said may still be of interest to the readers.

If my memory serves me aright, nothing has ever appeared in relation to the subject in our bee-literature here, so I will speak of Mr. Hannemann, try to give the essentials of his management, and mingle with it some facts and the experiences of others as opportunity may present.

When Mr. Hannemann wrote his last report for the *Bienen Zeitung*, in 1879, he was then a bee-keeper of thirty years' experience. He had made a specialty of apiculture for twenty-six years in the extreme southern part of Brazil; had introduced our common honey-bee into that land, and was the originator of modern bee-keeping there.

I did not know that, according to Dr. Miller, Hannemann was a tailor by trade; but it is very evident that he could not have had very much leisure to follow his profession, for he was so extensively engaged in bee-keeping and honey-production that his breeding-stock numbered over 300 colonies, which were allowed to swarm at will. From what I have read on and between the lines it would seem to me that all these colonies were kept in stationary hives, perhaps box hives, as we call the hives without frames. Hannemann's aim was, in the first place, to have his colonies swarm all they would, and that was all he expected or asked of them. He called them his stock capital. The young swarms were the interest, so to speak, to be exchanged for honey during the honey season. The *how* will be shown later on.

Southern Brazil must be well adapted to bee culture. Hannemann spoke of his honey season as lasting from two and a half to three months. For six weeks the secretion is so plenteous that bees will not work on any honey offered them in the open air. I think we might be able to show something with such a honey-flow. I have not seen a day like that here in several years, even when I secured a fair yield.

The queen-excluder was invented or gotten up for a different purpose from what we use it for now. Hannemann may have been led to make his invention on account of many young swarms often going together when swarming at the same time, and he wanting to make a sure thing of it to catch all the queens. At any rate, he constructed a sieve with the view of sifting his bees before hiving them, and so the appliance has been named Hannemann's bee-sieve. In sifting his bees he probably encountered the difficulty of getting the drones and queens mixed together in a heap; and the gain by using just the queen-excluding plate proved insufficient for the accomplishment of his object, so he added another sieve having wider passages, with space between the two. This worked well. It separated and secured queens and drones, allowing the workers to pass through. The latter were hived in the peculiar mammoth hives to be described further on, the drones destroyed, and the queens confined in cages of his own construction.

This brings us to the second use of the queen-excluding metal, for these cages were made of *such* (I wonder that the excluding metal has not been used for this purpose by some of our bee-keepers who practice caging during the honey season). Hannemann wanted his queens caged so as to allow the bees to communicate with them unhampered, hence he made the cages of perforated metal. The unique manner of his management of the young swarms made it strictly necessary to have *every* queen secured. If possible, all the swarms coming in one day were placed in *one* single mammoth hive. Mr. Hannemann speaks particularly of one day in 1879, when he had 79 swarms issue, to be taken care of by himself with the help of his three young children, to be sifted, queens caged, and the bees weighed and hived. One giant hive and two barrels accommodated this enormous "pile" of bees. They gave at the end of the season, net, about 1600 lbs. of honey.

Mr. Hannemann speaks at another time of his "Boss Giant hive" of 50,000 cubic inches, made four stories high, cupboard fashion, with eight hinged doors in the rear, to give access — a hive that harmoniously accommodated 54 kilograms of bees (about 119½ lbs.) from which he harvested, at the close of his 2½ months' honey season, 448 kilograms of honey (equal to about 987 lbs.), and 38 lbs. of wax, reckoning a kilogram as $2\frac{204}{1000}$ pounds. In other words, one or each kilogram of bees was exchanged for 8¾ kilograms of honey. Of the 14 caged queens, but 9 were alive when the honey was *cut* out.

In 1879 Mr. Hannemann had to take care of 700 swarms (young) in two months. His entire crop amounted to 15,428 lbs. of honey and 1212 lbs. of wax. He stored his honey largely in cemented vats, or cisterns. It is astonishing, so adds Mr. Hannemann to his report, to think that so much honey could be produced in one locality, especially when taking into consideration the fact that over 300 breeding colonies used large but (of course) unknown quantities for breeding besides, and storing their winter supplies at the same time. I would add, it goes to prove that Hannemann has a splendid location, perhaps like California or Cuba, although he says that the *slipshod* bee-keepers complain that bees do not pay any more.

The publication of Hannemann's system created a great stir among the German bee-keepers at the time — probably more on account of the novelty of it than for any other reason, although, of course, we all appreciate the queen-excluder. I have not heard of any one in Germany who practices the Hannemann system as he did. Mr. H. Guehler, after several years of trial, thinks but little of the excluder for his locality, but values highly the queen-cage constructed *a la* Hannemann. He worked out this system : When the honey season is nicely begun he confines the queens in Hannemann cages, and places them on top of the brood-frames with super, or, as they call it, "honey-chamber," above. The bees, he says, immediately take possession of the super, providing honey is coming in.

When we cage a queen in the brood-nest in an ordinary wire-cloth cage, the bees behave but little differently from what they do when the queen is entirely removed. They almost always construct queen-cells over larvæ, and the progress in the sections is slow, if, indeed, any work is done at all. This is according to my experience. But when a queen-cage of the Hannemann order is used, and the bees can communicate freely with the queen, they do not seem to be aware that she is caged at all, and Mr. Guehler finds that every thing moves along in the hive normally. Queen-cells are not constructed. The combs become heavier and heavier, and the work in the super—that is, comb-building and honey-storing — goes right on unless the honey-flow ceases. Guehler thinks it is best to release the queen again after two weeks of confinement, removing at the same time a few of the heavy combs from the center of the brood-nest, inserting comb foundation in their stead. Empty comb does not prove to be a success, as the bees will fill in honey too soon. The bees will draw the foundation into comb just about as fast as the queen can utilize it, and she will at once be ready to enter upon her maternal duties as though she had not been obliged to suspend her work. The bees very readily accept their queen, for in reality they have never been separated from her. Guehler finds that queens come out uninjured by this confinement, prove to be just as fertile, productive, and long-lived, as though they had always had their freedom. When carrying the caging plan to excess—that is, confining the queen for an unreasonably long time (in this one case he speaks of it was five weeks), laying workers made their appearance.

It seems, then, that some German bee-keepers have modified the Hannemann system to suit their own environments, or picked out the valuable features according to their own judgment. I noticed, also, that, after the publication of Hannemann's invention, queen-cages like his were offered for sale. They consisted simply of a little wooden frame covered with the perforated metal on each side.

Right here I want to add that some of our German friends across the water have adopted at least some features of *our* methods, our hives and appliances, owing in a great measure, probably, to the efforts made by Mr. Stachelhausen, of Texas, and myself, to enlighten them on the subject of American bee-hives and our general management of bees. Of course, progress is slow. It seems very hard to give up old methods and adopt new ones. But progress is there. My private correspondence with bee-keepers of Germany establishes that fact beyond a doubt.

Naples, N. Y., Aug., 1898.

(*Concluded next issue.*)

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

ABOUT SEPARATORS.

Question.—Do you advise the use of separators in producing comb honey? A bee-keeping neighbor says that money put in separators is thrown away, and, worse still, because bees will not store as much honey where separators are used as where they are not. What is your opinion in the matter?

Answer.—There is no question but bees will store honey in sections without the use of separators; but the question is regarding its *marketable* shape, where stored without them. I first used separators in 1872 on a small scale, to try the feasibility of them. These were cut so as to leave ½ inch between top and bottom of the sections and the separator, as I felt sure they would retard the labor of the bees while storing comb honey, inasmuch as they apparently divided the bees into small clusters. To test the matter thoroughly I used a part of the apiary without separators, and even went so far as to leave the bottom pretty much entirely off the sections on some hives, to see how much the gain would be ; but at the end of the season each was about balanced as regards the result in surplus honey, and I began to think that the claim of more honey without separators had no foundation in fact. But I found I had made a blunder in cutting my separators too narrow, in my anxiety to separate the bees as little as possible, for the bees built their combs through the half-inch space, where they were in any way crowded for room.

The next year the separators were cut ½ inch wider, and some were slotted so as to divide the bees as little as possible. Some were used with and some without separators. The result was no perceptible difference as to yield, while many of the sections without separators could not be sent to market at all, as the combs in them were so bulged and crooked that it was impossible to crate them. I finally adopted a separator as wide as the inside of the section, less ¼ inch at top and bottom, with no perforations of any kind, and to-day, although I have experimented many ways since then, and a quarter of a century has passed away, I see no reason for abandoning the separators as then chosen, but, on the contrary, many reasons for still continuing their use, a few of which I will give:

First, I often wish to move the sections about to a different position on the hive, and exchange them with other colonies, to start these colonies to work as soon as possible, believing that better results can be secured in this way. If I did this without separators I should get very uneven combs, as my experience has taught me.

Second, I wish to take off the sections as soon as a sufficient number are sealed over to warrant the work in doing so, while they are "snow-white," and not leave them on the hive till all are finished, and the first capped over all travel-stained by the bees. Now, if we do this, taking out one-third or more, and place those partly filled or empty, except the foundation used for starters, in their places, unless separators are used, the bees will lengthen the cells of those farthest advanced, so as to crowd the others, thus making irregular combs, as we often have them when putting an empty frame between two full ones in the brood-chamber during a honey-yield, and before any of the honey-cells are sealed.

Third, by the use of wide frames with separators we need take none of the precautions about the nice adjustment of the sections and hive, which is always a part of the directions where sections are to be used without separators, but simply slip our sections into the wide frames and clamp them together with no further trouble. I should want to use the wide frames, even did I use no separators, to keep the sections clean, and free from propolis, if nothing more. Were such wide frames used, section honey would reach market in much finer shape than it often does now. From all of my experience and observation up to the present time I believe that section boxes can not be used to the best advantage without separators; hence I consider them one of the greatest inventions which have been made to help the bee-keeper, and expect to continue their use until I am convinced that I am wrong in the above conclusions.

GETTING BEES FROM A HOUSE.

Question.—A swarm of bees came and went into our house near the roof, in the early part of the season, and I wish to get them into a hive. Can it be done? If so, how?

Answer.—If the questioner is willing to have his house torn to pieces to the extent necessary for getting the bees and honey out, there should be no difficulty in changing the bees from the house to a hive, especially if he can call to his aid some bee-keeper of some experience living within a few miles of him. Briefly outlined, the course to pursue would be as follows:

From the inside or outside of the house (just which is most convenient to work from) make a small hole through to the bees; and with a bee-smoker, or by a person smoking a pipe, blow smoke through the hole till the bees are caused to fill themselves with honey, which should be in about five minutes, when you will proceed to tear off the partition of plastering, clap-boarding, or shingles, as the case may be, till the bees and combs are of easy access, when you will proceed to transfer the combs to the frames of the hive, as given in any book on bee-keeping. As the combs will be likely to contain much honey at this time of the year, more pins or transferring-clasps will be needed to hold them in the frames than would be necessary if the transferring were done when there was little or no honey in the combs, else they may, from their great weight, fall out of the frames. The middle of a comfortably warm day should be chosen for this work, unless there are other bees in the neighborhood which would be liable to cause trouble from robbing. In such a case do it toward the close of a mild day, commencing soon enough to get the job completed before dark. After the house has been torn away so the bees can be gotten at handily, the bees should be made to cluster in a box if possible, by placing such within easy access of them, just above the combs, so that, as comb after comb is taken out, they may crawl up into the box and be clustered there by the time all the comb is fitted into the frames. When all the bees are in the box, set the box with the open side out, in the shade, if the sun is shining hot, and leave them thus for half an hour, so that they may cluster together like a swarm, thus causing them to mark their location anew as does a swarm when leaving the parent hive. Besides, they can then be easily hived by jarring them out of the box in front of the hive after it is lowered to the ground, and placed where it is to stay. Fit combs of honey in the frames till at least 25 pounds is in, as that is about the right amount for winter, after which the rest can be used by the family. If there should not be this amount, feed sugar syrup to make up the deficiency. If from any cause you fail to get the bees in the box they will, after a little, cluster in a swarm somewhere near where they were, when they can be hived in the box and then taken to the ground and put in the hive without the necessary precaution of having them stand the half-hour; for by the clustering of the bees in any place, without combs, when filled with honey, for a half-hour or so, they are caused to consider themselves as homeless, after which they will mark their location anew and stay where put; though it might be well for you to take the precaution of leaning a wide board up in front of the entrance to the hive, so that the bees will bump against it in starting out, thus causing them to mark their location anew, even if you do not happen to get every thing just right in your operations. If, in addition to this, the house is repaired before the bees fly, and a sheet, or something of that kind, is put over the former place of entrance to their old abode, so as to make it appear like a strange place, scarcely a bee need be lost.

CONVENTION NOTICE.

The next meeting of the Fresno County Bee-keepers' Association is to meet at the City Hall, Fresno, Cal., at 10 o'clock P. M., Wednesday, Sept. 14. All bee-keepers invited. W. A. Gilstrap, Sec.
Caruthers, Cal.

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE DISLIKE OF BEES FOR BLACK HAIR; PLAIN SECTIONS A SUCCESS.

As you ask if any one is sure about bees showing a desire to sting certain colors, and as I have as cross bees as can be raised, I would say I think they do. My hair is very black, and when I go out into my yard they will fairly go crazy to get into said hair; and when I go through the yard with low shoes and black stockings they are sure to take my ankles.

About the plain sections, I am highly pleased; and if, on further trial, they should act the same—or, rather, the bees—they would be a grand thing. Mine are the tall ones; and wherever the bees worked on them at all they finished the greater part of those they commenced on instead of beginning on all and finishing none, as they generally have done with the 4¼. I would say, by way of explanation, that this locality is overstocked, and no honey to speak of is gathered until the basswood, which lasted only a week this year. That gave me more finished sections, and fewer partly filled, than did the others in T crates without separators. I shall try more of them another year. C. E. HAMMOND.

Corry, Pa., Aug. 13.

THE DISLIKE OF BEES FOR BLACK.

You ask for reports of the effect of color upon bees, p. 574. Dr. Miller's experience tallies with mine. My bee-veil has a three-cornered piece of black cloth where it passes over each shoulder, and I have often noticed that belligerents make straight for these patches. The patches are small, and make a marked contrast with the cloth immediately beneath.

I have often worn black pants in work with bees, but have to confess that their color never seemed to stir the ire of the bees in the least. One bee-keeper in the neighborhood told me some time ago that black does not suit the bees. You can see that my experience may substantiate your suggestion.

Craftonville, Cal. RUSSELL J. HALL.

HOW BEES DESPISE BLACK.

For a long time after I began to handle bees they would sting my black eyes. I found upon observation that they went for black in any form. I tried them over and over again with hats, coats, etc. I have long known that they will resent black. I have black and white chicks running in the yard. The bees go for the black, and at them alone. There is no guesswork about this aversion to black color. HAM SMITH.

Ionia, Mich., Aug. 4.

HOW THE BEES STOLE CURRANT JELLY.

A few years ago Mr. James Marvin, of St. Charles, Ill., who will be remembered by some of our old-time bee-keepers, had a curious incident in this direction. In looking through his hives one day he saw his bees had been gathering some red honey, and it puzzled him to tell where they were getting it. A few days afterward he overheard some of the women telling about one of their neighbors who had been making some currant jelly, and she had put it out on the window-sill to cool, and then went visiting that afternoon. When she came home she found all her jelly gone, and the tumblers licked clean. "Oh the plaguy boys!" said she. This, of course, was a clew for Mr. Marvin, and upon further examination he found it was the old lady's currant jelly the bees had stored away for winter use. Of course, he kept that to himself; but we had a good laugh over it. GEO. THOMPSON.

Geneva, Ill., Aug. 11.

PLAIN SECTIONS A SUCCESS; CROSS-CLEATS ON FENCE A LITTLE TOO THIN; SEASON GOOD, AND AVERAGE 50 LBS.

The honey season that has just closed here has been a remarkable one for this locality. We had a honey-dew that commenced the first of May and continued till the last of July. I had one colony that stored 120 lbs., and my general average was 50 lbs.

I have been using the plain section and fence this year, and find it to be ahead of any thing I have ever used. There is one defect; and when you overcome that, your plain section and fence hobby will override every thing. It is this: The cleats on the fence, which come next to the side of the super, are so thin that a bee can not enter and pass on up the side as it should, but must stop and pass under the fence. And because the bees can not enter this space they pile it full of propolis, and it makes a hiding-place for the moth and ants. But I must confess that the fence is a great improvement over the plain wood separator; and he who produces honey without a separator of some kind is just a little too slow to keep abreast of the times.

DR. S. H. HURST.

Laconia, Ind., Aug. 6.

[We have the matter of thickness of cleats under consideration. The majority seem to think the fence is perfect; but we are looking for defects, if any.—ED.]

CLUSTERING OUT, AND HOW STOPPED BY ENLARGING THE ENTRANCE.

Mr. Ham Smith, page 515, says or tells of a way to enlarge the bee-entrance by raising the front ½ inch and putting a wedge-shaped strip under each side to fill the open spaces, in the fore part of the warm season, when the bees get crowded and warm, and get to loafing on the outside of the hive. I did the same thing last season and this, only I did not close the openings on the sides. I put small pieces of lath under each front corner. If those pieces did not have the desired effect of getting them inside, or started out to work, I added other pieces till they did disperse, and this additional ventilation usually gets them out of the notion of swarming, as I desire honey rather than increase. I do not have time to pay much attention to my bees, but I try to give them an abundance of room to store surplus honey. Very little honey here ready for market. O. C. Burch.

Fairbury, Neb., Aug. 1.

[Our experience has been in the line of the foregoing, and yet as good a man as Doolittle can see no advantage in the practice.—Ed.]

THAT ROYAL JELLY IN WORKER-CELLS.

Mr. Editor:—Your question on page 550, July 15, "I wonder how friend Wilkin knew it was royal jelly that he found in worker-cells," is a very proper one. I much dislike the practice of giving one's opinion or guess as a positive fact. I have often observed that, when young queens commence laying both irregularly and sparingly, a few of the young larvæ will be fed three times the amount ordinarily fed to worker larvæ, probably because they have more food prepared than they have larvæ to feed it to. But in the case referred to there were several sheets of young larvæ, and the 75 or 100 cells that I spoke of as being half filled with joyal jelly seemed to me to be more opaque than the ordinary larval food. Possibly the amount of it together made it appear so; but this extraordinary filling-up of cells simultaneously with the drawing-out of queen-cells, a number of them being these same worker-cells widened out all alike, having larvæ one to one and a half days old, while all around them the great number of larvæ were being fed in the ordinary way, seemed to justify me in saying it was all the same thing—royal jelly. R. Wilkin.

Ventura, Cal., July 30.

FACING HONEY; DOOLITTLE DEFENDED.

Some folks seem to think that Doolittle is away off; but I think that some one else is just as far astray. A few years ago I shipped 1500 lbs. of honey to Detroit. It was all faced. I saw the commission man after that, and he said my honey was the best that came to market—no fault found. Another year I shipped faced honey to another man, and no fault was found. I always face my honey, and have kept bees nine years, and never had any fault found; but I always put the same grade of honey in the crate.

Now, I believe in being honest, but I do not think it dishonest to face comb honey. I do not think that facing honey is the same thing as facing apples. A large apple is better than a small one of the same kind; so if I buy a barrel of apples for No. 1, and two-thirds of them prove to be No. 2 or 3, or small apples, I am cheated; but if I buy a crate of faced honey, and two-thirds of it is a little travel-stained, or is not in quite so straight combs, or is not quite so well filled, who is cheated if it is bought by the pound?

Bro. A. I., I do love to read your "Home" talks. I sometimes try to preach — indeed, I did nothing else for four years until my health failed. N. Vandewarker.

Brown City, Mich.

REPORTS ENCOURAGING

Honey crop is good. I shall get 4000 lbs., and may get more. J. F. Teel.

Elmont, Texas, July 31.

Poorest springing in 30 years. I lost 60 out of 300; cause, poor and little honey; fed 1000 lbs.; had bad weather. Crop of white honey is best in 8 years; buckwheat is just commencing. James Hallenbeck.

Altamont, N. Y., Aug. 1.

This has been a glorious year for the bee-keeper. There seems to be no end to the crop. To date my apiary has averaged, spring count, 120 lbs. extracted honey, and still coming in. S. C. Corwin.

Braidentown, Fla., Aug. 5.

In reply to your honey prospects, I would say I have the best crop I ever took, both as to quality and quantity. Dry weather is just what the saw-palmetto likes, both in bloom and fruit. Nearly all of my crop was gathered from the flowers, sealed in the hives, and extracted without any rain during this time. W. J. Drumright.

Sarasota, Fla., Aug. 8.

FROM 74 TO 127, AND 4500 LBS. OF WHITE HONEY.

I have just commenced casing my honey up. I have got a good crop of white honey from 74 colonies, spring count, and increased to 127 colonies. I have taken, at the lowest figure, 4500 lbs. of white comb honey. That is the largest crop of honey by half that I have yet heard of in this locality. Bees here are strong and healthy, and no foul brood reported to me since spring.

As foul-brood inspector I had to destroy about 25 colonies; but since then I have found no signs of the disease where it then existed, and their bees have given them fair results. I think our strict attention will entirely eradicate foul brood. A. H. Guernsey.

Ionia, Mich., Aug. 4.

REPORTS DISCOURAGING

So far as I have been able to find out, the crop of white honey in this section will average not more than two pounds to the colony. No one among my correspondents reports any. The honey-dealers write me that the crop is very light all through the State. Buckwheat prospects are good. Our bees have just got to work on it. Harry S. Howe.

West Groton, N. Y., Aug. 6.

EDITORIAL
BY
E. R. ROOT

THE AVERSION BEES HAVE FOR BLACK.

EVIDENCE is now beginning to accumulate, showing almost conclusively that bees have a decided dislike for black objects. Two or three have written that they will attack a black hat when they will not notice one of a lighter color; and one man writes that his hair is as black as coal, and that they will strike for it every time. Another one speaks of two black spots in his veil, which his bees seem to regard as legitimate objects of attack.

I must confess I was loath to believe that bees would be more vindictive toward one color than another, but I presume I shall have to give up to Dr. Miller.

STARTERS VS. FULL SHEETS.

SINCE the question has arisen regarding the advisability of using full sheets or starters in sections, I have been paying particular attention to the honey that has come in; and while, of course, I do not *know* positively what the bee-keeper who produced the honey in question used, I think I can detect almost every section that had only starters in the first place. For instance, when I see the top edge all worker and the rest all drone, I draw the conclusion that only a starter was used. Such boxes, to my eye, present a motley appearance. As nearly as I can judge, at least 33 per cent of the comb honey built off from starters will have, near the top, worker-cells, and the rest drone.

THOSE HONEY-LEAFLETS.

Now is the time to distribute the honey-leaflets. They were written with special reference to the consumer who has been persistently educated to the notion that all comb honey is "manufactured stuff," and that extracted is always adulterated. Among other things they show that honey is more palatable and wholesome than any other sweet in the world, and how it may be used in cookery. The leaflets are sold on the basis of cost, as it is to our interest, as well as to that of bee-keepers in general, that they be scattered broadcast over the country.

For a year back we have been inclosing them in all letters that have gone out from our office, and there are others who are doing the same; besides, there are a good many who put a leaflet in every crate of honey and in every package of extracted where it is possible to do so.

DRONE COMB IN SECTIONS INFERIOR IN APPEARANCE, AND WHY.

I HAVE just been looking over several lots of comb honey that have come in. Quite a number of the sections are built out with drone comb, and are in every way inferior in looks and whiteness to the worker. I do not see how anybody can think one looks as well as the other. I asked one of our men, who did not know what I was driving at, to point out those boxes that, in his estimation, looked the prettier. He placed his finger on the worker-cell comb every time. I asked him why. "Why," said he, "I do not like the looks of those great big cells." There is another thing that may have something to do with the matter. Cappings of worker comb are apt to be a little thicker, and therefore whiter. The capping of drone is quite liable to be water-soaked or thinner.

RAISING CELLS A LA DOOLITTLE.

I HAVE already told you in these columns that we were meeting with marked success in raising cells by the Doolittle method. Elsewhere in this issue I take pleasure in presenting you a half-tone reproduction of one lot of cells that our Mr. Wardell secured—not necessarily the best lot, but, if I am any judge, a fair average of what he has produced. As all of our readers may not have Doolittle's book on queen-rearing, I have thought best to reproduce a few paragraphs from that book that will give the *modus operandi* in a nutshell. This is the way he makes his cell-cups:

> While thinking of this matter, it came to me—why not dip the cells, the same as my mother used to dip candles? This thought so waked me up that I wondered at myself for not thinking of it before, and immediately I had some wax in a small dish, over a lamp, to melt. While this was melting, I hunted up the old stick that I used in forming the cells at my first trial, which was nothing more than a tooth out of a common hand hay-rake. This tooth was now fitted to a queen-cup, as perfectly as I could do it with knife and sandpaper, while a mark was made around the tooth where the open end of the cell should come, so that I could know just how deep I wanted it to go in the wax, to give me the desired depth of cell.
>
> By this time the wax had melted. I then got a dish of cold water, and, after dipping the end of the stick into the water (up to where it was marked, or a little deeper), and giving it a quick jerk, to throw off the water not needed, it was quickly lowered into the wax up to the mark, and as quickly lifted out, twirling it around and around in my fingers, so as to cause the wax to be equally distributed over the wood. I now had a film of wax over the stick, so frail that it could not be handled, but in it I saw the commencement of a queen-cell, which would, I was sure, be a boon to my fellow bee-keepers, for the wax much resembled the very outer edge of a queen-cup built on new comb.
>
> I then dipped it again, not allowing it to go as deep within one-sixteenth of an inch as before, and in twirling the stick after taking it out, the end having the wax on was held lower than the other, so that the lower end, or the base, would be the thickest, as the wax would flow toward the lowest point. As soon as the wax on the cell was cool enough to set, it was again dipped, not allowing it to go as deep in the wax as it did the previous time, by about a thirty-second of an inch, when it was cooled as before. In this way I dipped it from six to eight times, when I had a queen-cup that pleased me, as the outer edge was thinner than the bees made theirs, while the base was so thick that it would stand much more rough usage than would cells built by the bees. I now held it in the water, twirling it so that it would cool quickly, and, when cold, it was very easily taken off of the stick or form, by twisting it a little. It could then be fastened to a comb, by dipping in melted wax, the same as I did with one of the cups.

This is how he fastens them to cross-sticks fastened in brood-frames:

> My next idea was to have all of my queen-cells built on a stick, or piece of frame-stuff, the same as I had read about; so when I again made some, instead of taking the cup off the form, I loosened it only enough so that it would slip off the stick easily, when it was

again dipped in the wax and immediately placed on a mark on the piece of frame stuff, which mark I had designated as a place for a cell. In an instant the cup had adhered to the frame-stuff, when the forming-stick was withdrawn. This cell was placed near one edge of the stick, which was one inch wide, one-fourth of an inch thick, and long enough to crowd between the side-bars of one of my frames. The cell was also placed near the center of this stick, as to its length, but close to one side of it, as to width. The next cell or cup was placed one and one-half inches to the right of the first, while the third was placed the same distance to the left, and so on until six were on the stick.

While we have been raising cells *a la* Doolittle, Mr. W. H. Pridgen, of Creek, N. C., it seems, has been meeting with equal or even greater success. In the last *Bee-keepers' Review* there is a double-page half-tone, showing some of his work. There are 18 queen-cells on one stick, and all of them great long peanut-shaped things. Just above them is a row of cell-cups which, I judge, are made after the Doolittle plan, and which, undoubtedly, will be completed into peanut queen-cells — "the double-jointed California affairs."

Doolittle put out his queen-rearing some 9 years ago. A few made a success of his method; but now in these latter days it seems there are quite a number of us who are getting hold of the plan, and are making a great success.

History repeats itself. One man has usually to be in a forward movement years ahead of the times. As the days and years go on, some one else follows in his steps until finally the whole crowd "catches on" and wonder why they did not do it that way before. Doolittle has been to queen-rearing what Morton and Aspinwall have been to the present method of producing honey in plain sections. Verily, the world does move; but it took a century before Galileo's assertion to that effect was regarded as any thing but a heresy, and another century before opposition to it ceased.

A BEE-TENT FOR QUEEN-REARING.

SOME time ago while out kodaking in our apiary I took a view of our apiarist, Mr. Spafford, inside of one of our bee-tents while working over one of the hives. It was during a dearth of honey, and, of course, the robbers were out sticking their noses into every cell of honey that was exposed.

As a result, Mr. S. had to do his work under cover. One of the neighbors' boys, who was near at hand, was called over to stand near the tent, to sort o' give life to the general scenery in the yard. As he stood there I took a shot, and here it is. These tents are made of mosquito-netting, and are of the folding sort. When opened up they are just high enough for an ordinary man to stand up under and work.

We use them for a great variety of purposes. For instance, if a weak colony or nucleus is being robbed we clap one of these tents over it, hive and all. Robbers are brought to a standstill instanter, while those in the hive, as soon as they escape, are caught in the tent, and there held. When the sun is down, and the bees have gone to their hives for the night, the tent is removed and the entrance contracted down to one bee. The next morning the bees in the robbed hive will usually have so far recovered themselves as to be able to resist any kind of onslaught.

Some years ago I used one of these tents during one of the worst seasons of robbing I ever knew, and I never thought of opening the hive during that spell without having over me the tent. When I began its use robbers were so bad that it seemed as if I should have to give up trying to do any thing in queen-rearing. But when I used the tent persistently, and they found they could not get even a taste, they gave up, and I went on with my queen-rearing operations during the rest of the season. While, of course, I could not work so rapidly, yet I was able to accomplish far more than before, and with much greater safety to the nuclei.

I have also tried the tent in the spring, in transferring from box hives to hives of the modern type. I have seen the time when it would be impossible to do any transferring at all, such as cutting and gashing into the comb, without the tent.

There is still another use. Several supers of comb honey, after being freed from bees as nearly as it is practicable to do with two or three vigorous shakes for each super, are piled up four or five high, and in, say, three or four such tiers. A tent is set over them, and securely anchored to the ground. These cases of honey are left in a shady place for a few hours, or while one is engaged in some other work. Toward night the bees will all have crawled out toward the top, and will be found clustered in the very peak of the house. It is then carefully set off and given two or three smart jars upside down, and, presto! every bee will take wing and go for its home. The supers may now be put on a wheelbarrow and taken to the honey-house, without so much as a single bee in them.

A HONEY-EXHIBIT ON WHEELS.

Some time ago we received a photo illustrating horses and wagon decked out with a display of honey, bees, and beeswax It was evident that this wagon was prepared for some gala occasion; and as it illustrates a new way of advertising I had an engraving made. Now for the life of me I can not find a word about the picture, and much less do I know or remember the name of the party who sent it. After rummaging about my belongings, and after waiting a considerable length of time for the lost to "turn up," I decided to put the picture in anyhow, and let it tell its own story.

The proprietor of the display is evidently the gentleman whose hand is on the wagon. Whoever he is, he seems to have an eye to beauty of arrangement and general good taste. If his wagon, with its display of apicultural products, was used in a procession, as is altogether probable, it must have attracted a great deal of attention. At all events, Gleanings proposes to have it attract wider attention by showing it to bee-keepers all over the world.

The exhibitor, besides having an eye to beauty, must have had "an eye to business." He evidently knew that such a display carried through the streets of his town could not help advertising him and his business in a way that would be almost sure to bring returns.

The arrangement of the four-wheeled exhibit is understood almost at a glance, and the expense of it, probably, would not exceed any considerable sum

Now, then, if the man who prepared this display will speak out we shall be glad to publish his name, and give him more advertising.

Ho, ho! after I had written the above, W. P. R., at my elbow, who is taking down my rambling thoughts in "turkey-tracks," or what some would call "pot-hooks and hangers," says he can locate the man. He *thinks* his name is Louis Werner, of Edwardsville, Ill.; but where, oh where! is his letter?

Later.—After putting the above in type we wrote to friend Werner as to the ownership of the display, and he says:

> Yes, this is my picture. I am glad I shall see it in Gleanings, for all the bee-keepers to see. You see it is a float in a display in the procession of a whole county, and I must say your engravers did a very nice job. It surely makes me "feel good." In October I will, if nothing happens, show another photo of a display. We are going to have a street fair. The display will be stationary, and, of course, I was invited to exhibit, and, of course, I surely will do so.
>
> Edwardsville, Ill., Aug. 22. Louis Werner.

NOTES OF TRAVEL

BY A. I. ROOT.

My trip from St. Paul further west on the Northern Pacific was diversified by some very different scenery. Through Minnesota and North Dakota we passed great wheatfields; and when we approached a station called Wheatland, between Fargo and Jamestown, I realized, as I never did before, something of the amount of wheat that is grown in America. The land is just rolling enough so that occasionally we could look off across the valleys. Clear up to the railroad tracks were the shocks of wheat; and in favorable localities, and with good farming, they stand pretty thickly over the ground. Just imagine wheatfields, or one continuous field, for miles and miles, and as far as the eye can reach. Away off in the distance the shocks of wheat looked like hills of corn. And still further on they seemed like little dots on clean yellow paper. I don't suppose a photo could give any idea of these immense wheatfields I passed through just at harvest time, and in one place I saw seven self-binders following one another around a piece of wheat. At every station we saw cars on the side tracks, loaded with brand new thrashing-machines and self-binders. In fact, one might wonder what so much beautiful new machinery could be for, until he turned his eyes over the great wheatfields. I judged there must be a tremendous crop this season, for all along the road they are putting up new substantial platforms where wagons can drive up high enough above the cars so the wheat can be emptied from the wagon right down into the car, with little labor. Every thing is wheat. There seems to be little or no rotation of crops in many places. Once in a while we see a small piece of oats, a little corn, and a few potatoes; but this is the exception. I do not know how long this thing can go on without some sort of rotation of crops. Of course, there is no manuring, and I judged they have not yet begun to use fertilizers. As a result of these large fields, the farmhouses are few and far apart. Schoolhouses and churches seem to be mostly in small towns along the railroads, and I fear that many of the farmers are almost entirely cut off from school and church privileges.

At Bismarck we crossed the Missouri River, which is muddy and rambling, a good deal as it is through the State of Missouri. After we passed the line from North Dakota to Montana the country became much more mountainous and wild, and agriculture begins to be confined to the watered valleys. At Glendive we strike a beautiful large river which I thought must be the Missouri again; but a passenger informed me that it was the *Yellowstone;* and I said to myself, as I gazed at the great broad river with its rapid current, "Why, is it possible that this great river comes all the way from Yellowstone Park?" Well, the railroad follows this Yellowstone River either right along beside it, or within sight, all the way to Livingston, and a branch road up through the canyon to Cinnabar also follows this Yellowstone River as it goes down the mountain; but from Cinnabar it goes clear up through the park to its source at Yellowstone Lake, which I shall mention again further on.

At Miles City and Billings I began to see large tracts of alfalfa; and when the car stopped long enough I looked in vain for a honey-bee, either on the wild flowers or the alfalfa. I did not find one. At Forsythe I found the largest quantity of Rocky Mountain bee-plant I ever saw in my life. There were large tracts where the ground was just covered with it. It looked like a snowbank at a distance, only it was pink instead of white. Not a bee was seen on this plant, and yet in the early morning there must be tons of honey going to waste.

At Billings I saw a public square in the center of the town, with such a beautiful stand of alfalfa, that I asked some questions about it. I happened to address the man who had charge of the ground. He told me that they decided a blue-grass lawn would look prettier, so they tried last spring to get out the alfalfa. They plowed it down deep, harrowed it thoroughly, and employed a man to rake out the alfalfa roots and stems, and then sowed their blue grass; but the alfalfa came up first, choked out the blue grass, and made a better stand than they had before plowing it up. Of course, they practice irrigation. Every thing has to be irrigated.

I reached Livingston early in the morning. Before leaving home I had ascertained from our subscription-list that we had a subscriber there — Mr. George A. Gordon. Friend G. informed me that he had no bees as yet, but had been taking Gleanings because he was interested in the matter. He said he did not know of a honey-bee within a hundred miles in any direction. He kindly procured a livery, and took me out a little in the country and up on the hills. While we found great multitudes of honey-plants we did not find a honey-bee; and I may state right here that I was not able to find a single honey-bee during the whole of my stay of ten days in and around Yellowstone Park. Mr. Gordon told me his attention was called to bee-keeping because a subscriber of ours, Mr. Carl Vollmer, at Billings, had a few colonies. During the present season he has already secured, he thought, about 200 lbs. of honey per colony. Now, friends, there is certainly a big field for bee-keeping in the valleys of Montana, where alfalfa is largely grown by irrigation.

You may look in almost any direction in and around Livingston, and see snow-capped mountains. This looks a little odd when the thermometer in the afternoon gets up pretty close to 100 degrees in the shade. The temperature is especially trying when there is no rain, and dust is everywhere. But it was my good fortune to meet gentle showers every day for four or five days during my stay in the park. These showers were sufficient to lay the dust nicely.

We went up a mountain canyon by rail to Cinnabar. There is some very interesting mountain scenery along the route. I would especially mention what is called the Devil's Slide. This is not unlike a place by the same name in California, that I have lately described, except that the mountain "slide" is blood-red where his majesty is supposed to have gone down so many times. As one goes past on the cars he can hardly resist the conclusion that sawlogs or something of like nature have been shooting down that straight and narrow passage so as to have worn the rocks smooth. This slide is between two walls of trap-rock, about 100 feet apart, extending up the mountain nearly 2000 feet. The name of the station, Cinnabar, was probably suggested by these beautiful red rocks in the vicinity.

At this terminal station I left my baggage, and started off on my wheel. Mr. J. W. Mackay, the gentlemanly agent for the Wiley Co., very kindly agreed to carry my grip and overcoat on the coach for 25 cts. a day; and I very soon had abundant reason to be thankful that I did not undertake to carry any luggage. If you are going to wheel it through the park, by all means get the coach to carry every ounce that you do not absolutely need on your journey. Most of my wheeling was done in my shirtsleeves, without trying to carry even my tool-case. The Wiley Co. also kindly agreed to pick me up at any point, and carry me, *wheel and all*, for $1.25 for each half-day. So you see you can ride your wheel in the forenoon, and, if you get too tired, be carried, wheel and all, in the afternoon, wherever you may wish to go.

The trip from Cinnabar to Gardiner is a very easy one. In fact, you do not need to get off your wheel at all if you are a fair rider. At Gardiner the road leaves the Yellowstone, and follows the Gardiner River for about two miles, then leaves the canyon, and starts directly up the mountain. Climbing up this mountain road is a big task without any wheel at all. I started off about six o'clock. They told me I had better wait till morning, but I was anxious to see the sights. I remarked that I could make five miles in two hours, even if I had to walk every step, and climb hills besides; and I *did* make it just at dusk, but I tell you I was pretty well tired out; in fact, I was too weary to take more than a brief glimpse of the wonderful springs. At daylight, however, I was out before anybody else was visible, studying nature.

Before undertaking to describe what I saw, I want to say a few words about Yellowstone Park, the hot springs, and the geysers in general. All along the road through the park the government has put up mile-posts. They are a great convenience to wheelers, as they tell you just where you are at every mile. These mile-posts also give you the elevation. If I am correct, Mammoth Hot Springs at the big hotel is 6387 feet above sea-level. So you see the whole Yellowstone Park is on the summit of a pretty good-sized mountain.

Our best authorities say this region was originally volcanic. In fact, they find the remains of extensive craters of several volcanoes. Well, now please consider that in these upper regions there is not only a terrible winter but a tremendous fall of snow; in fact, the snowfall is so great that there are no means known for getting through the park in winter except on snowshoes; and the man who has charge of the signal station of the Weather Bureau is about the only one who stays all winter in the park unless it be a few soldiers. Well, when this great snowfall melts, the water goes down into these old volcanic craters until it reaches, at some unknown depth, the internal fires of the earth. This produces steam, and the steam forces the water up to the surface of the earth. The water comes back boiling hot, and the steam along with it. It also becomes mixed with various minerals such as salts of lime, silica, etc. Boiling water, as you know, is a great solvent. When it comes to the surface of the earth, thus charged with minerals of various kinds, it deposits them fast by evaporation. Boiling water evaporates very rapidly when it reaches the air. Secondly, it drops these chemicals as it cools off. Water, at the boiling-point, will hold in solution a very much greater quantity of many chemicals than it will when cooled off. Now, keeping the above facts in mind, you can readily imagine how the sides of these boiling springs may be coated and incrusted with different chemicals. I expect to have some pictures ready for our next issue, illustrating the very strange things I saw that first morning at Mammoth Springs.

Before going further, let me say a word concerning the places of entertainment in the park. First, we have the great hotels. I stayed my first night at the one at Mammoth Springs. It is a hotel of elegance, and inside I found it to be a place of comfort. It is true, their prices are $4.00 a day; but you will have to pay pretty nearly that price at the large hotels in the cities. It is somewhat of a novelty to see such an establishment away back in the wilderness. The table has all the appointments of a first-class meal in the dining-car on our best railroads. When we consider that every thing has to be pulled up these great hills by horse power, the prices, certainly, are not very extravagant. As there have been some reports that their prices were extravagant, and that it costs a dollar simply to turn around, I took some pains to find out about it. A first-class bath costs only 25 cents. That is what you pay almost everywhere. After going through the park my shoes were pretty badly roughed up, and looked rather dry and "seedy." No one tries to keep his footwear shined up in the park; but on my return I asked the porter at the big hotel to fix up my shoes good. He first oiled the rough red spots, then burnished them down smooth, then did one of the best jobs of blacking I ever saw anywhere, and he charged me only a dime. A few days ago I paid 15 cents on the streets of Livingston for a very ordinary job. The waiters at the big hotels are very obliging. They came down and took my wheel and carried it up the steps for me (for which I was very thankful), showed me where to wash, and, even though I was dusty and unpresentable, they showed me just as much attention as if I had ridden up in one of their own coaches. I found this same careful and considerate courtesy, both on my way out and on my way back. I have said this much for the hotels because I think it is their due. But while I am about it I want to find fault a little with the baggage-men who take the trunks from the train (on baggage-wagons) up to the hotel. As the trunk containing my wheel was at the back side of the car, I was obliged to wait for these people to unload. Now, these men cursed and swore because the guests of the hotel had brought such a pile of trunks. In fact, they seemed to be displeased because so large a party had come in the same day I arrived. Even when ladies came around to see about their baggage, these men did not cease their vile talk. I am sure the transportation company will look after this when they are informed of it. When friend Mackay, who belonged to the Wiley Co., came up and found I was going through on a wheel, it was a refreshing contrast. The other fellows, with vile oaths, had declared they would not carry my wheel-trunk up the hill to the hotel for either love or money. Mr. Mackay is principal of the high school in Butte, Montana. Mr. Wiley's drivers on part if not all of his coaches are students who are carrying tourists during their vacation time, in order to get money to complete their studies; and I tell you, friends, there is some difference in the behavior of a young man who is trying to get an education, and the fellows who sometimes drive coaches.

OUR HOMES,

BY A. I. ROOT.

SUNDAY EVENING, IN THE HEART OF THE YELLOWSTONE.

For a time it seemed I should be compelled to travel with the crowd on Sunday, or wait here for the uncertain coming of another band of tourists; but toward Saturday night, much to my surprise (even though I had prayed over the matter) one after another of our party consented to use Sunday as a day of rest here in the very heart of the geyser region. Mr. and Mrs. Boyles, who have charge of the camp, are Christian people, but told me that, if we had any meeting, I would have to take entire charge. The only one to lead the singing was Minnie, a very pretty 16-year-old girl who waits on the table. Around the campfire, back here in the wilderness, all seem to meet on a common level; and, in fact, it takes all we can call in to get up a good family circle, ofttimes. As we had but one Gospel Hymns, Minnie and I were obliged to do most of the singing. As my audience were mostly people of wealth and education, some of them addicted to expensive habits, I felt more than usual anxiety about what I should say, but finally selected for my reading the latter part of the 6th chapter of Matthew, selecting for a text, "Seek ye first the kingdom of God and his righteousness, and all things else shall be added unto you," and spoke something as follows :

Dear friends, after the many pleasant acquaintances I have made in the past few days I realize more than ever before how differently we are constituted, and how far apart many good people stand on the moral issues of the day. We are, many of us, prejudiced, and this is true of both believers and unbelievers; and many times because we do not really understand one another. This Bible I hold in my hand, I verily believe will do more to harmonize the world than any or all else combined, if we will only listen to it and read it.

Let us now consider our text. As a rule, all people assent to at least the first part of it. Few people now, of education and culture, dispute the existence of God. It is now, as in olden times, only the *fool* who says there is no God. Of course, there are people who wish they could escape God, for they can not bear the thought of God's righteous judgment. Having acknowledged the existence of a righteous God it seems very reasonable that we, his creatures, should accord him the *first place* in our thoughts, and, in fact, in the lives we live. This very service we are all now taking part in is, in fact, setting apart one day in seven to acknowledge him and to seek him, in the language of our text.

The world may not be all ready to *do* it, by a long way ; but the world, nearly all, will *agree* that it is a very good and proper thing to *seek* him first, and place him above all things. Now if, in our business matters, and matters of state, we could agree to seek *first* God's kingdom and his righteousness — why, it would make a heaven here on earth. Let us consider for a moment how very far we are from agreeing on religious matters. Somebody has said there are *seventeen* different kinds of Presbyterians, and probably almost as many of other denominations. If bodies of *Christians* can not agree any better than this, how are we to expect to unite believers and unbelievers in harmony? Can we not drop some of our denominational walls, and unite on the little text we are considering?

Let me now quote another of my favorite and *precious* texts: "Great peace have they who love thy law, and nothing shall offend them." People get offended, and this is what makes the divisions in the church and the divisions in society. Are there any nowadays who love God's law to the extent that *nothing* offends them? When we find such a one, *he* will have that "great peace."

Dear friends, and all who hear my voice, would *you* have that *great* peace? Are you sometimes "blue"? do you have trouble and misunderstandings? In our walks over these beautiful grounds, several have suggested that a plunge in a boiling spring would end all troubles *much quicker* than drowning. Have you ever had such thoughts? Shall I give you a remedy? Make this Bible your friend ; read it every day; follow its counsels, and life will be worth living. When you open your eyes in the morning you can sing, "Praise God, from whom all blessings flow." You will thank him every day for having given you a life to live; but it must cease being a life for self. It must be to God *first* and *above* all, and then the promise in the latter part of the text will *surely come*.

LETTER TO MY SUNDAY-SCHOOL CLASS.

Dear Boys:—I am sitting on the shore of a beautiful lake about ten times as large as Lake Chippewa. It is about 8000 feet above sea-level, and is surrounded by mountains capped with snow. In fact, snow is always in sight. It is one of the best places for catching speckled mountain trout in the world, and they are the finest fish I ever ate. Last night at supper the cook said we were all to eat just all we pleased, as the guests had caught so many they would have to throw a lot away; but I started to tell you

A BEAR-STORY.

The United States government protects the bears and all other animals here, so they are very tame. Well, a few days ago a large fine bear climbed into the meat-man's wagon and picked a large piece of beef out of one of the barrels while the man had gone into the hotel. The piece was so large the bear had to hold it with his fore paws while he walked off on his hind feet. The man came out and caught him at it, and pounded him over the head with a club; but he wouldn't let go his meat, and got away; but he grunted and growled a good deal at the pounding he got.

Well, when I heard them telling about it I wanted to see the bear, and a party of us went about half a mile and found him just about sundown, up in a big pine-tree. I rather think somebody chased him up the tree. Well, we wanted to see him get down, and so a man climbed a slender pine-tree near him and began punching him with a pole. As soon as he saw the man coming up he pricked up his ears, and began to growl, and show his teeth. I tell you, he is a great beauty. His fur is soft and shiny, and he is just as soft and handsome as any kitten you ever saw. Well, the bear climbed as high as he dared on the slender top ; but as the man kept poking him he kept growling at a fearful rate, and got awful mad; but he went slowly still higher; finally the slender limbs broke beneath his great weight, and down he slid with a great crash to the larger limbs, and then he began climbing down with a rush for he was mad. At the same time the man began to get down lively, for he feared the bear might try to climb *his* tree after he got down. By this time a crowd of people had collected ; and just for fun, while we were all laughing and yelling, some called out, "Three to one on the bear!" others, "I put my money on the man." The man got down first, however, and then the bear wouldn't come down any more. A bear can go up a tree very fast, but he is awkward and slow in coming down, for he has to prick up his soft velvety ears that look so cute and cunning, and see where to put his great feet. With much love I am your absent teacher.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

When I left home on the 28th of July I was fighting the blister-beetles on my early potatoes. Up in the swamp they had stripped the leaves off from one corner of the patch, so I supposed they would die down and ripen up. In fact, the whole patch seemed pretty nearly mature. Well, when I went up to the swamp garden on my return home after an absence of nearly four weeks, one of my

"HAPPY SURPRISES"

met me. The potato-patch that I supposed would be dry and brown was a mass of green. The rains which they had in great plenty during my absence had started a second growth, and the vines of the New Queen potato not only covered the ground, but they were a mass of rank luxuriance, equal to any thing I saw out west. You may remember I wrote they did not seem to have blight out there. When I got home there was no blight here either. I am now inclined to think that what I called *blight* is mostly if not all a drying-up on account of the extremely dry weather. When plenty of rain came, new leaves came out; and even the stalks where the bugs had left only bare brush are now leaved out again. Of course, my New Queen potatoes may be bad-shaped and prongy; but as we are growing them mostly for seed they will answer just as well, only they will not look as handsome. I pulled out a great potato weighing about a pound, from one hill where I saw the ground puffed up. It was of good size and fine shape, but it had some new potatoes in the shape of knobs growing out from the main one. Now, if it were the Freeman potato under the same circumstances, the potatoes would grow larger but not prongy. I have never found any other potato that would take on a second growth, and keep its shape, as will the Freeman.

On one side of the swamp garden we had put some well-rotted manure between the rows. The manure had to be removed, and we did not know what else to do with it. Well, you just ought to see the potato-vines where that old manure was put. They just cover every thing, and the color is enough to make a gardener's heart bound. I do not believe this *old* manure will make the potatoes scabby. I have tried it a great many times, and it seems to work all right. I should hardly like to put on manure fresh from the stables, under the same circumstances.

Well, it was not the potatoes alone that caught my eyes. You may remember that wheat that fell down so badly, and that the clover was all choked out. Before I went away I directed that the wheat-stubble should be gone over with the cutaway, and crimson clover sown — that is, wherever the red clover was missing, and then the whole was to be harrowed down smooth with the Acme. This was done, and the crimson clover is now up, helping to make the ground green again. I say *helping*, for the wheat that got shelled off when my crop went down has come up too, with this treatment. Now, what will be done? I am sure I am not farmer enough to know what will be the result of sowing wheat the fore part of August. I am sure of one thing—it will be excellent to turn under with the clover for potatoes next year. But can we make any better use of it? The stand is excellent, and the wheat looks all right, only it is a month or more ahead of the usual sowing-time. All over our ranch I find the potatoes are rank and luxuriant. What I took to be *blight* has entirely disappeared.

Our potatoes planted near the first of July did not come up evenly. The hot weather probably dried up a good many of them before they could come up. I had supposed, until this season, that, when potatoes were sprouted on the barn floor, with tough green sprouts, they would always come up; but they did not this time. I am having the potatoes cultivated where the growth is not too rank for the horses to get through, and then I am having them nicely hoed. Where hills are missing, the boys are pulling the dirt, with hoes, up around the other hills. Do you say this is lots of work? Well, the potatoes are the Bovee, Manum's Enormous, and other valuable varieties. I know I can get a big yield — yes, a much bigger yield—by going to the expense of this handwork, and I rather think it will pay with high-priced potatoes such as I have mentioned.

OUR TEST OF EARLY POTATOES.

It is a very hard matter indeed to say which potato was earliest, except that, as I have stated many times before, the White and Red Triumph were died down and ripe away ahead of any others. But there were potatoes among the Bovee, Early Ohio, and others, almost as large for table use as the Triumphs of the same date. Both of the latter kept on growing, and made a much better yield. The Triumphs are certainly more susceptible to blight, or dying down from early maturity—perhaps I might say from *premature* maturity—than any of the other varieties.

By the way, the New Queen and Early Vaughn are growing yet just like the potatoes in the swamp. They lived long enough to catch the rains and start a second growth. The other earlies died down. Now, which one gave the most and nicest potatoes? Well, my answer is a surprise to myself. In fact, I do not know but it is another of my "*happy* surprises," because it is our old friend the Early Ohio. Once more I can say with the Experiment Station, the world has not yet produced, all things considered, any better early potato than the Early Ohio. They are of good shape, good yield, and more uniformly of good size, than any other unless it is the Bovee. The Bovee is going to be, I predict, the most successful competitor to our old and tried friend the Early Ohio. And, by the way, there are different strains of the Early Ohio. This is evident, for the strain we are growing this season is a great improvement on any other we have had for several years. I got them from an old friend who says he always has a good yield of nice clean potatoes, of good size, by late planting. This strain is almost as round as an apple—almost no small ones in the hills, and a very good yielder.

In the above report there are several encouraging things; and one of them stands out strong and clear; namely, it pays to keep your potato-patch clean, and to fight the bugs, even if the potatoes are apparently almost ripe enough to dig. Why, I should have lost more than half of my crop of New Queens up in the swamp if I had said they were so nearly ripe it would not pay to put out more work on them. All over the West I saw potato-patches abandoned after the vines pretty well covered the ground. I am sure it is a mistake. When you can not get a horse to go through them any more, let a boy go through just after a rain, and pull out the weeds. Where the potatoes have been well cared for, it does not take very long to get all the scattering weeds out of an acre, and these scattering weeds grow with amazing rapidity. I found red-top among some of our potatoes, almost a yard high, when I am sure there was not any in sight before I left home. Even though it is to-day the 23d of August, we are having our potato-fields cleaned out nicely. If our present rains continue, I shall expect our potato-vines to keep growing clear on until frost catches them. At this season of the year there are no bugs, and not often any blight. When we have passed the extremely hot weather of summer we have the very best time for potatoes to grow, and this is one advantage in late planting.

You may remember the big potato that I got last October at friend Terry's (see page 597, Aug. 1). Well, the potatoes that I grew in the greenhouse finally started in my absence, and a great many of them are up, and are growing rank and strong. I am going to make a pretty good record of a crop from one potato in just one year, after all.

Manum's Enormous potatoes, planted on some rich ground where we turned under strawberries at the last picking, are making a most astonishing growth. I not only feel happy every time I take a look at them, but about every time I think of them, as the vines are now covering the ground almost like pumpkin-vines. And this reminds me of

THE BENSON RENOVATOR COW PEA.

I had half a pint of these peas, and planted them some time in June. They were along the edge of that field of wheat that had lodged. In cutting the wheat, the three horses with the binder went right over the peas. They stopped and started so much when the machine was clogged that the cow peas were almost tramped out of existence. I had pretty nearly given them up. But on my return home I had another of my happy surprises in seeing the great rank mass of green foliage that not only covered the ground but spread over on to the wheat-stubble and into the corn on the other side. Some of the vines are six feet long, and there are great pods, almost a foot long, crammed full of peas. If a tenth part of what friend Benson claims for this renovator cow pea is true, it seems to me it must be a great thing; and at least a part of it, I am sure, *is* true. I should just like to plow under all this mass of vines in order to fit the ground for planting potatoes; but to do this I suppose we shall have to plow the pea-vines under in the fall.

Humbugs and Swindles.

After reading the article in GLEANINGS about the electric healer at San Saba, Tex., I wish to say that we have one of the same frauds located at Waco. He calls himself Dr. W. T. Coleman, natural electrical healer. A great many go to him for treatment, and some are willing to testify in almost any way that they have been entirely cured of all sorts of maladies; yet I have no idea he has benefited any one in the least, except to create a little mental and physical excitement. He rubs the naked skin, and ladies, young and old, submit to his treatment, and pay a big price for it. I think most of his patients are ladies. We are visited frequently by divine and electric healers, spiritualists, hypnotists, and other frauds, and they all seem to reap a good harvest from the "suckers." You have my sympathy in all your efforts to better mankind. JNO. M. KILLOUGH.

Waco, Tex., Aug. 18.

That is right, friend K. Hold them up to public gaze, and pass them around. Give them free advertising. Shake up community until people begin to open their eyes to the absurd folly of the quacks. Let us keep the thing going until the Oxydonor people, Electropoise, electric healers, and everybody else who is robbing sick people finds that the business does not pay. The proper thing to do is to *starve them out.*

ONE PERSON OUT OF EVERY SEVEN DRINKS, BUT NOT MORE THAN ONE OUT OF SEVEN THINKS.

The above is from our national president of the Anti-saloon League, Howard H. Russell. Bro. R. adds further to my heading above that the other five are indifferent. Now, the above strikes me very forcibly, as we have been having in our town of Medina a pretty fierce conflict—in fact, we are having it yet—in regard to open saloons. Our town has had no open saloons for a little over twelve years; but since we have, within a very few weeks, made a big raid on the saloons that are not open (except to a favored few), the enemy have been massing their forces in favor of an *open* saloon. I *can* get along very well with the person who drinks, and I stand right beside (or at least I hope I do) the one who *thinks;* but I have been *exceedingly* tried with the other five out of the seven who, without a thought, sign their name to a petition, and, in fact, even without *reading* the petition so as to know what sort of paper it *was* they signed.

SPECIAL NOTICES BY BUSINESS MANAGER

HONEY MARKET.

The demand for honey is opening early this year, at prices which indicate a marked improvement over last year. Inquiries for honey are numerous, and we are selling freely to many who often have honey of their own to sell. We are having plenty of offers from Colorado, Utah, and Nevada, showing that the crop in those sections is good. We have on hand the following honey at prices annexed, all in 60-lb. cans, two in a case; Nine cases light-amber white sage, No. 30, at 7c per lb. Thirty cases light-amber white sage, No. 10, at 7c. Four cases buckwheat at 5c. We shall have plenty of clover and basswood mixed, in a few days, at 7½c. Fancy white comb honey, 14c per lb. A No. 1 white, 13c. Full-crate lots at ½c per lb. less. The light amber No. 10 is candied somewhat, otherwise is same as No. 30. We have written several that we were entirely out of light amber; but an inventory shows above result.

STATISTICS.

We find, on footing up our tally-books, where we keep a record of the different styles of hives packed for shipment, on orders that we have sent out this past season, nearly 3000 Danz. hives; about 3000 Dovetailed chaff hives; about 7000 ten-frame Dove. hives, and over 50,000 eight-frame Dove hives, besides a great many of other styles for other people, so that, all together, we have disposed of at least 70,000 hives the past season, or about double the record of any previous year. It is also safe to say that we could have disposed of from 10,000 to 30,000 more if we could have supplied them promptly. We do not anticipate such a record next year, as there are, without doubt, a large number of the hives sold this year in the hands of bee-keepers, unused. In view of the outlook we have decided not to build the large addition to our factory, for which we had plans prepared two months ago. We do intend, however, to put in the larger engine, and extend our factory building 20 feet, adding some new machines, and changing others, so as to increase our capacity when needed.

Special Notices by A. I. Root.

THE UNITED STATES BEE-KEEPERS' UNION.

Please remember that the next session of this society is to be held at Omaha, on the 13th, 14th, and 15th of this month. Providence permitting, Ernest and I expect to be on hand. Friend York, of the *American Bee Journal*, informs us that the round trip from Chicago to Omaha will not be more than $14.75. He also suggests that it would be pleasant for the bee-keepers to go in a car together, so far as possible, from Chicago on. Inasmuch as a great many of the friends will wish to visit Omaha anyhow, before the exposition closes, we should be very glad indeed to see a good turn-out of bee-keepers. Copies of the Program may be had of the Secretary, Dr A. B. Mason, Station B, Toledo, O., by sending 5c to cover postage, etc.

EXTRA NICE STRAWBERRY-PLANTS AT VERY LOW PRICES.

In consequence of the recent abundant rains, in connection with heavy manuring, we have an unusually fine lot of extra strong well-rooted strawberry-plants; in fact, they are the very best we ever had at this time of the year. Notwithstanding, we make the following low prices on all of the standard late varieties. In fact, they are lower prices than we have ever given before on strawberry-plants. Till further notice, prices will be as follows: 10 plants, 10 cts.; 100, 50 cts.; 1000, $4.50. If wanted by mail, add 5 cts. for 10 or 25 cts. per 100 for postage. The plants we are prepared to furnish at the above prices are Jessie, Rio, Sharpless, Warfield, Bubach, and Haverland. The three last are imperfect. Of the newer varieties we can furnish Darling, Earliest, Marshall, Brandywine, and Wm. Belt, all perfect, at 15 cts. for 10 plants; 75 cts. per 100; $6.00 per 1000. The Carrie and Margaret will be double the above prices, as our supply is limited. Any of the above will be potted in jadoo fiber for one cent a plant extra, providing you give us 10 days' notice before you want them. If potted plants are wanted by mail, add two cents each for postage. Nick Ohmer we can now offer potted in jadoo, postage paid, at 10 cts. each, or 85 cts. for 10 plants. I am well aware that the above prices on many of the new varieties are away down below those advertised by many other growers; but we have at present a great surplus on hand that we are anxious to get rid of.

AMERICAN PEARL AND OTHER ONION-SETS FOR FALL PLANTING.

In consequence of a short crop we shall be obliged to advance the price on American Pearl to the following: Quart, 25 cts.; peck, $1.25; bushel, $4.50. Other varieties of onion-sets will be as follows:

White Multipliers—quart, 20 cts.; peck, $1.00, bushel, $3.50. Large Multipliers (for planting out to make small ones), half the above prices.

Whittaker onions, same as the large Multipliers. We are sold out on small Whittaker onions.

White Victoria and Prizetaker sets, the same as American Pearl. Red and yellow top onion-sets (sometimes called acorn onion-sets), 15 cts. per quart; peck, $1.00; bushel, $3.50.

Yellow and red onions, for growing the above acorn sets, half the above prices.

Winter Egyptian onion-sets—quart, 5 cts.; peck, 35 cts.; bushel, $1.00. For a description of all these onions and onion-sets, for fall planting, see leaflet on growing bunch onions, free of charge, and also our regular seed catalog.

If wanted by mail, add at the rate of 10 cents per qt. for postage and packing

EARLY POTATOES FOR SEED.

Owing to the exceedingly wet spring, followed later by a severe drouth, the crop is small in most localities. In fact, rather poor potatoes are now selling for table use for from 50 to 60 cts. Nice ones would bring from 65 to 75. In view of this I do not think the prices will be any less than last year—probably higher. As inquiries are coming in, however, at this early date, we shall be obliged to fix a price, subject to changes later on. For the present they will be the same as last season—$1.25 per bushel, or $3.00 per barrel, with the exception of the Bovee. This seems to be remarkably free from any tendency to blight, especially for so early a potato. Ours, planted late in June, are now a perfect mass of luxuriance and health. For the present the prices on the Bovee will be $2.00 a bushel; per barrel, $5.00. In regard to earliness, the Red and White Bliss stand unquestionably at the head; that is, the vines die down and dry up before any other; and potatoes fit for eating are certainly as early as if not a little earlier than any other variety known. The following is a list of the potatoes we have already dug, and which are in the cellar, ready to ship. After considerable debating of the matter, we place them in the following order in regard to earliness:

Triumph, either White or Red; Bovee; Early Ohio; Early Andes; Early Zehr; Early Prize; Burpee's Extra Early; Early Vaughn; New Queen; Early Thoroughbred; Freeman. There are three or four kinds that ripen so nearly at the same time that I really can not tell which one is earlier than the others. For instance, of those mentioned, the Early Ohio, Zehr, Andes, Prize, and Bovee. The Bovee furnishes rather larger potatoes than the others; and I am inclined to think it would furnish potatoes the size of a hen's egg, say, earlier than any other in the list, unless it is the Triumphs. Of course, different seasons and different localities might give a different result.

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Pure Honey.

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We are headquarters for

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grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

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IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00, tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

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3 " " "	2.00
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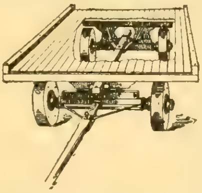

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originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddlers' wagons. Steel-wheel trucks, $18.

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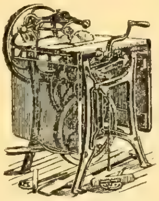

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Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Calalog free.* 1-24ei

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BEE SUPPLIES.

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Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

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Ready! Stacks of queens reared under most favorable conditions from either three-band or golden strains, *warranted* at 60c each; 6 or more, 50c. Free circular. Am member N. Q. Breeders' Union.

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I HAVE NOW ON HAND

a number of breeders producing faultless 5-banded bees. If you have never had a queen of this Laws strain of beautiful honey-gathering bees you should order at once. Price $2.50 each. Warranted queens ready by return mail at usual prices. Address

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Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

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GET READY FOR '99.

Golden Italian Queens; virgin, 30c; 4 for $1.00.

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As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

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This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

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Over 30,000 words and 250 illustrations.

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Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

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In which he tells "how we have made a run-down farm bring both profit and pleasure."

This is a large book, 6x9 inches, 367 pages, quite fully illustrated. It is Terry's first large book; and while it touches on the topics treated in his smaller hand-books, it is sufficiently different so that no one will complain of repetition, even if he has read all of Terry's little books. I should call it the brightest and most practical book on farming, before the world at the present day. The price is $2.00 postpaid, but we have made arrangements to furnish it for only $1.50.

We are so sure it will be worth many times its cost that we are not afraid to offer to take it back if any one feels he has not got his money's worth after he has read it. If ordered by express or freight with other goods, 10c less.

1	Poultry for Pleasure and Profit.**	10
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Fully illustrated, containing every thing of importance clear up to the present date.

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Last year only about one per cent—only one subscriber in 100—ordered his Review discontinued. If the Review could secure 1000 new subscribers the present year, there is an almost absolute certainty that at least 900 of them would remain; not only next year, but for several years—as long as they are interested in bees. Once a really *good* bee journal visits a bee-keeper a whole year, it usually becomes a permanent member of his family.

I should have no difficulty whatever in getting twice 1000 new subscribers this year, if all of the bee-keepers in this country had read the Review the past year. I have sometimes thought that it might pay a publisher to give away his journal one year, simply for the sake of getting it into new hands. There are, of course, decided objections to such a course; but I am going to come as near to it as I dare. Here is my offer:

If you are not a subscriber to the Review, send me $1.00, and I will send you twelve back numbers, the Review the rest of this year and all of next year.

Each issue of the Review especially if devoted to the discussion of some special topic, is really a pamphlet containing the best thoughts and experience of the best men upon the topic under discussion Twelve back numbers of the Review are, to a certain extent, so many little books devoted to as many different phases of bee-keeping. Some issues of the Review are now out of print; of others only a few are left; while of others there are several hundred. Of course, I shall send those of which I have the most, but no two alike.

Most people subscribe for a journal at the beginning of the year. In this case there is no use of waiting, as you will get the Review for next year just the same as though you waited until next January to subscribe, and you get all the rest of the numbers for this year *free*. The sooner you subscribe, the more free issues will you receive.

Let me tell it over once more. For $1.00 you get twelve back numbers, the Review the rest of this year, and for all of 1899.

W. Z. HUTCHINSON, = = Flint, Mich.

"Queens."

Gray Carniolans and Golden Italians. We are head quarters for above races.

Grade & Prices of Queens	May & June	After July 1.
Untested queen..................	$ 75	$ 65
Tested queen......................	1 50	1 25
Select tested queen...........	2 50	2 25
Best imported queen........	5 00	4 00

Write for prices on nuclei and full colony. Descriptive price list free.

F. A. Lockhart & Co., Lake George, N. Y.

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Second-hand Wheels Cheap.

ONE WHEEL.

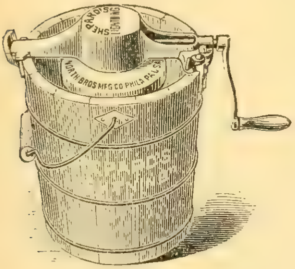
Name-plate lost; gents'; maroon finish; Morgan & Wright quick-repair tires, in good order; weight 25 lbs.; price $15.

ONE $150 REMINGTON TANDEM.

Gear 68 or 72; a fine machine, used but little; 1897 pattern; wood reversible handle-bars; Hartford single-tube tandem tires, practically as good as new. We offer this for an even $40.

THE A. I. ROOT CO., Medina, Ohio.

CLOSING PRICES ON ICE-CREAM FREEZERS.


SHEPHERD'S
NORTH BROS MFG CO PHILA PA

We have in stock a quantity of Shepherd's famous ice-cream freezers, which we offer at the below named prices in order to close, owing to the lateness of the season.

2-qt., each, $1.35.
4-qt., each, 1.85.

THE A. I. ROOT CO., Medina, O.

FOR SALE.

7000 Lbs. Fine White Extracted Honey.

Also **Southern Bloodhounds.**

ELIAS FOX, Hillsboro, Wis.

SEND YOUR ADDRESS on a postal card and get a copy free of my book on queen-rearing.

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ITALIAN QUEENS for sale. The rest of the season, 50 cts., or three for $1.00. Colony, $4.00.

MRS. A. A. SIMPSON, Swarts, Pa.

For Sale Cheap.

We have the following articles which we offer at special low prices to dispose of.

One set Burrell's telegraph instruments, consisting of key sounder and relay for four gravity batteries, etc.; cost $15 00; we offer, to close, at $7.50.

One guitar, excellent tone; cost $12.00; we offer at $7.50. First order gets it.

One ladies' bicycle; cost $45.00; used a few months; we offer, to close, at $23.00.

THE A. I. ROOT CO., Medina, O.

CASH FOR BEESWAX.

We pay 25c per lb. cash, or 27c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 30c for *best selected wax*. *Old combs will not be accepted under any consideration.*

Unless you put your name *on the box*, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by *express*.

THE A. I. ROOT CO., Medina, O.

Wants and Exchange.

WANTED.—To exchange a 10 inch foundation-mill in perfect condition, for a horse in same condition; or for a market-wagon.
E. W. BROWN, Eden, Erie Co., N. Y.

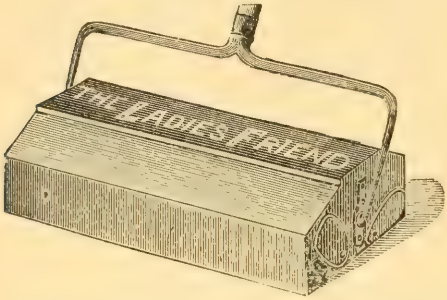
WANTED.—Barnes or Acme hand or foot power saw. J. T. SHEDD, 94, New Braintree, Mass.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
BYRON WALKER, Evart, Mich.

Special Prices to Close out Surplus Stock.

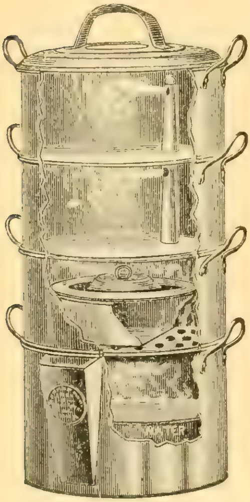
In closing out our Department Store, we find we have a larger stock of the articles named below than our successors care to assume; and in order to reduce stock of same, we offer them at the following low prices. Prices hold good only while stock lasts; always best to name second choice.

Ladies' Friend Carpet-sweeper.



Oak-finish case; wheel on one side; best quality brush. Mrs. Root has used one of these sweepers for ten years, and does not want any other kind. **Special price to close, $1.15 each.**

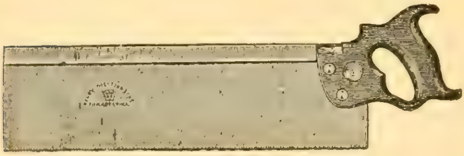
The Beveridge Automatic Steam Cookers.



It is a very convenient arrangement for cooking. It is a well-known scientific fact that food cooked by steam is more savory, juicy, and nourishing than by any other process.

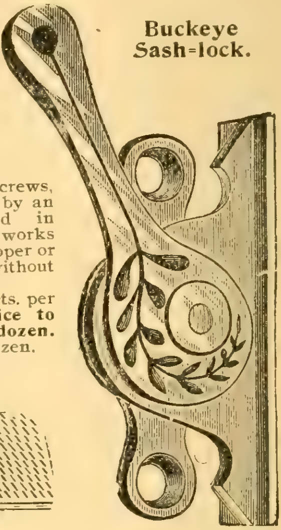
Food cooked by this cooker retains its entire flavor and nutritious qualities. It confines the odor of cooking to the kitchen. It occupies little room. You can cook from one to four different articles at the same time in compartments one above the other. It positively does not mingle the flavors. You can cook onions or cabbage in the lower vessel, and pudding in the one directly above, and the odor from one does not reach the other, but is confined to its own particular vessel. The food is cooked as well and as thoroughly in the top compartments as in the lower one. It can be used upon and fits any kind of stove—coal, wood, coal oil, gas, or gasoline. Explicit directions accompany each cooker.

No. 0.	4 vessels, diam. 8 in., 2 qts., 4 lbs.	$1.00
No. 1.	4 vessels, diam. 9 in., 3 qts., 5 lbs.	1.40
No. 2.	5 vessels, diam. 9 in., 3 qts., 6 lbs.	1.65
No. 3.	4 vessels, diam. 10 in., 5 qts., 6 lbs. 6 oz.	1.80
No. 4.	5 vessels, diam. 10 in., 5 qts., 7 lbs. 8 oz.	2.00



Back-saw. Has a 14-inch blade; Disston's make, but stamped "McArthur;" extra-fine steel; blued back; neatly polished beech handle; 3 rivets. This is the bargain saw of the list. **Special price to close, 40 cts. each**; postage 25 cts.

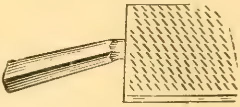
Buckeye Sash-lock.



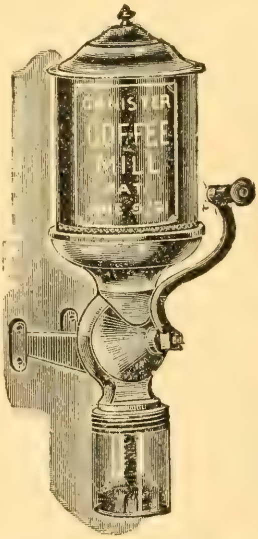
This device holds the sash securely by friction in any desired position, as tight as if it were in a vise. It prevents the sash from rattling, and excludes the dust by making tight joints, and yet it does not mar the wood. It is put on with two screws, and can be put on by an inexperienced hand in three minutes. It works equally well upon upper or lower sash, with or without weights.

Regular price, 50 cts. per dozen. **Special price to close, 40 cts. per dozen.** Postage 28 cts. per dozen.

Cattle-card.



For cattle and horses; solid block; good strong handle. **To close, 6 for 20c; 35c per doz.; post., 5c each.**

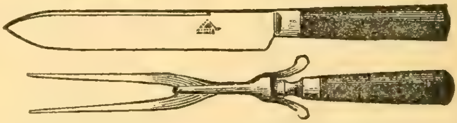


"Pound" Coffee-mill.

Screws to wall; japanned; can holds just one pound; air-tight cover; good grinder; black enameled; adjusting-screw; detachable black enameled cup. Each 50 cts.; dozen, $5.00. **Special price to close, 35 cts. each; $2.00 for box of six, or $3.75 per dozen.**

Nest-eggs.

Wooden or enamel. **Special price to close, 10 cents per dozen; 85 cents per gross; postage 3 cts. each.**



Our One-dollar Carving-knife and Fork. Swell handle; guard on fork; fine steel; cocoa handles; warranted. A bargain at the price. Pair $1.00; postage 15c. **Special price to close, 75c per pair.**

The A. I. Root Co., Medina, Ohio.

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Honey Column.

CITY MARKETS.

NEW YORK.—New-crop comb honey is arriving freely, our receipts for the week amounting to nearly 5000 crates Quality is fine, and better than last season. Demand is good at following prices: Fancy white, 14; No. 1, 12; amber, 11, and dark and buckwheat, 9@10. Some strictly fancy white, glassed sections, would probably sell at 15c lb. Extracted in good demand. Market rather bare, and we solicit shipments of any kind extracted. We quote white clover and basswood at 6@6½; amber, 5½; Southern, in barrels, 52@60 per gallon, according to quality. Beeswax very dull at 26.

HILDRETH BROS. & SEGELKEN.
Sept. 10. New York.

MILWAUKEE.—The condition of this market for honey is favorable. The supply is only moderate, and the demand is improving as the cool season comes on. Thus far the receipts have been mostly extracted white. What comb has been received is very good quality. We advise shipments of both extracted and section honey and feel confident this market will give as good results as any other. We will now quote fancy, 11@12½; A No. 1, 11@12; No. 1, 10@11; dark or amber, 8@10; extracted, in barrels, kegs, or pails, white, 6@6½; same, dark, 5@5½; beeswax, 25@27.

Sept. 8. A. V. BISHOP & Co., Milwaukee, Wis.

DENVER.—There is not much improvement in our market only in quantity received. We can still quote No. 1 white comb at 10c. Large producers are holding back, evidently for better prices, which they ought to have. We are having splendid sale for No. 1 white extracted, and can quote same at 6c. There are large quantities offered.

R. K. & J. C. FRISBEE,
Sept. 9. Lock Box 1014, Denver, Col.

CLEVELAND.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½; light amber, 11; buckwheat, 9; extracted, white, 7; light amber, 6. The demand for honey is exceptionally good, owing to the crop in this vicinity being very light.

A. B. WILLIAMS & Co.,
Sept. 8. 80-82 Broadway, Cleveland, Ohio.

CHICAGO.—Honey has sold well for the past few days, and all of the best white comb that is in proper shape sells at 12 cents; off grades of white, 10@11; amber, 9@10; dark grades, 7@8; extracted, white, 5@7; amber, 5@6; dark, 4½@5; beeswax, 27.

R. A. BURNETT & Co.,
Sept. 8. 163 S. Water St,, Chicago, Ill.

KANSAS CITY.—The receipts of comb honey are larger. We quote fancy white comb, 12@13; No. 1, 11@12; amber, 10@11; extracted, white, 5½@6; amber, 5@5½; dark, 4½@5; beeswax, 22@25.

C. C. CLEMONS & Co.,
Sept. 9. Kansas City, Mo.

MINNEAPOLIS.—Fancy white-clover comb, now jobbing at 11@12; fancy white-clover extracted, 6@6½. Market in better condition for extracted shipments than for comb.

S. H. HALL & Co.,
Sept. 10. Minneapolis, Minn.

COLUMBUS.—Fancy white, 14@15; No. 1 white, 12@13; No. 2 white, 10@11; dark, 8@10.

THE COLUMBUS COMMISSION & STORAGE CO.,
Sep. 10. 409-413 N. High St., Columbus, O.

ST. LOUIS.—Fancy white comb, 12@12½; A No. 1 white, 10@11; No. 1 white, 9@10; dark and partially filled, 5@8, as to quality. Extracted, in cases—No. 1 white, 6@6½; No. 2, 5½; amber, 5; in barrels — No. 1 white, 5½; amber, 4½@5; dark, 4@4½. Beeswax, prime, 24; choice, 24½. At present there is a good demand for honey, and we advise prompt shipment.

WESTCOTT COM. CO.,
Sept. 9. St. Louis, Mo.

PHILADELPHIA. — Honey beginning to sell more freely, but prices are hardly established—so many conflicting reports as to crops. We quote fancy comb, 14@15; No. 1, 12½; No. 2 (amber), 10. Extracted clover, 8; amber, 5½@6. Beeswax, 28.

WM. A. SELSER,
Sept. 10. 10 Vine St., Philadelphia, Pa.

WANTED.—Extracted honey. Will give my 10-inch foundation-mill in first-class condition for the best offer of extracted honey—white, amber, or buckwheat.

E. W. BROWN, Eden, Erie Co., N. Y.

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FOR SALE.—White-clover extracted honey in 60-lb. tin cans, 7c lb.; two or more cans at 6½c. Buckwheat, 5c lb.; two or more cans at 4½c; f. o. b. Lehigh Valley R. R. C. J. BALDRIDGE, Kendaia, N. Y.

WANTED.—One carload of extracted honey.

S. P. LOVE, Louisville, Ky.

FOR SALE. Bound volumes of Bee keepers' Review, American Apiculturist, and Farm Journal. For terms address L. H. LINDEMUTH, Lehmaster, Pa.

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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly.

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Vol. XXVI. SEPT. 15, 1898. No. 18.

STRAY STRAWS FROM DR C. C. MILLER

Horseradish leaves crushed are among the latest remedies for bee-stings.

I'm exceedingly thankful to say that, although the harvest was a failure, the bees are filling up nicely for winter—on cucumber, I think.

As proof that bees need fresh air, M. Gubler cites in *Revue* the fact that bees begin brood-rearing near the entrance, where fresh air is plentiful.

Bee-gloves of cotton, *double*, are advertised in *Revue Internationale*. Perhaps the same end would be gained by having a pair of cotton gloves to fit, then a larger pair over.

A writer in *L'Apiculteur* has seen bees passing freely from one kind of flower to another while gathering only honey, but when gathering pollen they adhere strictly to the one kind.

In *Centralblatt*, mention is made of the manufacture, on a large scale, of a mixture under the name of "table honey," consisting of honey and sugar of a certain kind. The writer thinks bee-keepers should have a friendly feeling toward the product!

The objection that Dr. Hurst makes to the fence, p. 659, might be overcome by having thinner wedges and wedging on both sides. By the way, isn't it easier to slide the wedges in and out with the fence than with the old way? Less friction to overcome.

A sample of dark-colored honey sent to the *British Bee Journal* was pronounced from crimson clover. Is crimson-clover honey always dark? [While the honey from crimson clover is darker than that from white, I shall be almost inclined to believe that our usually accurate cotemporary is in error.—Ed.]

At a meeting of the Northern Illinois B. K. A., "What good can we expect by joining the Bee-keepers' Union?" was one of the questions discussed. "As a result of the discussion, eight became members." If the matter were similarly brought up in every bee-keepers' meeting, the Union would have quite a boom.

Yes, it must be that locality makes a difference as to bees bulging over the edges of separators. There's Aikin's honey, p. 652, bulging with the separator ¼ inch below top of section, while on p. 657 Doolittle's experience of 25 years shows the honey all right with the separator ⅛ inch lower than Aikin's. Then there's E. W. Brown, p. 654, with fences ¼ below top of section, and no bulging with *plain* sections.

The deep indentations in those queen-cells, p. 647, promise good queens. Wouldn't their looks be helped a trifle if the cells were not quite so sharp-pointed? [I do not know. I am inclined to think, however, that the fact of whether they are pointed or rounding is due to the peculiarity of the bees building the cells. If I mistake not, one colony may build pointed cells and another colony rounded ones.—Ed.]

Bee-veils of horse hair are among the things used in Europe. Can any one tell us as to their durability and desirability? [Such veils might be strong, but they would be too coarse to see through readily. I much prefer a veil with a facing of silk brussels netting—a veil that will wear out in a season, or less than a season, than to have a strong durable affair that is both hot, and difficult to see through.—Ed.]

Closer attention shows there are more exceptions than I had supposed as to bees using the side for entrance when the hive is raised on blocks. But the rule is that the front is the entrance used; and the only harm that comes from the exceptions is that, when the hive is let down, it bothers the bees. [This goes to prove my old assertion, that the bees never do any thing *invariably* in their work in and about the hive.—Ed.]

You say, p. 656, you can have the bottom edge of the fence so adjusted as to be queen-excluding. I doubt it. Takes too nice work. Some of the openings would let a queen through, and some would be too small for a worker. But does the queen go up often enough to make such a thing desirable? [The feat is not so difficult as you imagine, doctor. We have only to make the bottom of the supers *practically* queen-excluding to make them almost *entirely* so. Still, I doubt whether the thing is worth seeking after. All worker foundation and full sheets will accomplish almost as much, will it not, as queen-excluding honey-boards?—ED.]

I WAS WELL AWARE, Mr. Editor, of the pleasure you take in making life a burden for me; but I didn't think you'd be so fiendishly vindictive as to do as you've done on p. 646, trying to set all the supply-dealers and inventors on me with samples of the "only ideal hive." No, I don't want any "ideal." I've settled on the eight-frame Dovetail, have some eighty already occupied, and will keep the old rotten things for supers at the close of the honey harvest, and for nadirs in spring.

CHICAGO has started a bee-keepers' association of its own, with quarterly meetings. There are 100 bee-keepers in the county, and they propose to fight adulteration. They've got a field for it, sure. Whoever blames Editor York for starting it (not adulteration, but the society) may not be far out of the way. [Do you mean, doctor, that Bro. York is to be blamed for starting the fight against adulteration, or that the editor of the *American Bee Journal* is *the* man who is at the bottom of the fight? I think I know what you mean, but I am not going to tell.—ED.]

"DO BEES ever perform any work 'always' in the same way?" is your question, Mr. Editor, p. 645. Perhaps not; but I never knew any exception to the rule that, left to nature, a queen enlarges her brood-nest in the spring by laying eggs outside the cells already occupied. Did you? [Yes, I think I do. While it is a rule that queens will lay as you say, yet there are some freaky things that will do almost the very opposite. I still think you can not attach the word "always" to any thing that either the bees or the queens do in the domestic economy of the hive.—Ed.]

YOU OBJECT, Mr. Editor, to small starters and drone comb in sections on account of looks. Isn't there a more serious objection? Unless you have plenty of drone comb in the brood-chamber, the queen will too often go up and lay in the drone comb in the sections. If barred out by excluder, the bees don't understand that the queen can't get up, and will hold some of those drone-cells empty for the queen. I'm not guessing; I'm talking about what I've seen and know. [Your testimony on this point is backed up by that of hundreds, and I may say thousands, of others.—ED.]

THE EDITOR of *Australian Bee Bulletin* says it was a woman he first saw throwing a stone over a limb to shake down a swarm, but he proposes to do better by keeping a supply of rockets on hand. [I am wondering what kind of women they have in Australia. I never saw a woman yet who could hit any thing she threw at—much less heave a stone, with a rope attached to it, over a high limb of a tree. I should be glad to show a picture of the woman who can perform such a feat; and if she or her husband will send me her photo I shall be glad to introduce her, with my very best bow, to the fraternity of American bee-keepers.—ED.]

AS SHOWING a marked difference in longevity of queens, D. W. Heise says, in *Canadian Bee Journal*, that out of 11 got from a United States breeder in 1896, six were superseded in 1897, while he has queens in their fourth year doing excellent service. But, friend Heise, don't you know that a queen's chances for long life are lessened when she has traveled and been introduced? [Does not this argue that more bee-keepers should raise their own queens? Doolittle's book tells all about how to raise the best queens in the world; and if it is a fact that transmission through the mails, and introducing, does cut down the longevity and perhaps the prolificness of queens, the practical honey-producer—the man who sees only bread and butter in the business—may well consider the matter. To promulgate such a doctrine will be rather bad on our own queen-rearing business; but if it is the truth, the truth must come out. Understand, I do not take the position positively that queens reared away from home, sent through the mails, and introduced, are shorter-lived than equally good queens reared at home. "Equally good queens." And this raises the question whether the man who makes a specialty of comb honey can also produce as fine a lot of queens as the one who makes a specialty of queen-rearing. All of these things deserve our thoughtful consideration, and the columns of GLEANINGS are open for the further discussion of the subject.—ED.]

GENERAL CORRESPONDENCE

LARGE HIVES.

Size of Hive has Something to do with the Prolificness of Queen; Large Hive Defined; French Hives.

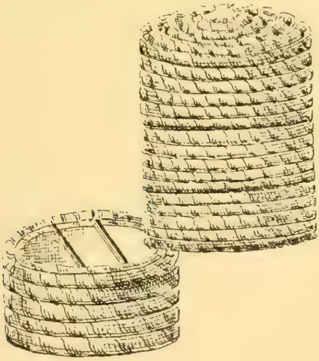
BY C. P. DADANT.

Friend Ernest:—After having received your request for a series of articles on large hives I read over the discussion between you and our Michigan friends, and will now give you our experience in the matter.

As I believe I said before in GLEANINGS, this subject is somewhat stale with us. We use large hives, as do all those who have tried them, because we do not see how we could keep bees in any thing smaller, and because our experience shows us, from experiments on a large scale, that they are preferable to small hives. But I must insist, in the beginning, that those who discuss the question, or the most of them, do not take the matter from the same standpoint that we do. Many who object to large hives take the ten-frame Langstroth brood-chamber as their standard for a large hive, as compared with the eight-frame, which they consider the proper size. With us the ten-frame Langstroth hive is a small one; in fact, it is the smallest hive that we have ever tried here; and the hives we use, and advise others to use, are considerably larger.

The discussion of this question of large hives would properly belong to my father; but he has of late entirely given up writing, owing to his age, 81. He used to write regularly very long articles for the *Revue Internationale d'Apiculture*, published in Switzerland, in the French language. These articles also he has almost entirely discontinued, although it is much less labor for him to write French than English, as he did not learn one word of English until he was 47 years old. But, nevertheless, he is at my elbow, and occasionally criticises what I write.

When my father came to the United States, in 1863, he had kept bees many years, but had never seen a movable-frame hive with shallow frames—the Debeauvoys hives, which he used in Europe, having frames nearly square, like those of the American hive of H. A. King. These hives were not large—about the size of the present ten-frame L. hive. The hives mostly used in Europe, or in France at least, at that time, were small straw (or box) hives. The leading writers at that time were Debeauvoys, whose system was ostracized by the practical bee-keeper, because his hive, although a movable-frame one, was not practical, for the frames fitted exactly in the box, without the indispensable bee-space; and L'Abbe Colin, a box-hive bee-keeper whose great ability as an observer gave him quite a renown. The hive that he recommended above all others was a round straw hive, a print of which I send you.



Its size was a trifle under 14 inches in diameter, and its height 10 inches, and its capacity was about the same as that of a six-frame Langstroth hive.

It was with this hive that bee culture was conducted then, and was apparently successful. An improvement that was recommended by the above-named writer in his book, "Le Guide du Proprietaire d'Abeilles" (The Bee-owner's Guide), consisted of ekes, or stories, of the same style—three stories, or ekes, each about 4 inches high, divided by slats, forming one hive of a capacity of 1650 cubic inches, or about 6⅔ Langstroth combs. It would seem that the size of the hive has something to do with the prolificness of the queen, R. L. Taylor to the contrary notwithstanding; for as Mr. Taylor, in one of his late articles, asserts, not one queen in a hundred will lay 2500 eggs daily, continuously, for a certain period. In the same manner, L'Abbe Colin, who used still smaller hives, says in his book:

"We can not estimate at more than 600 the number of eggs that the mother of a strong colony can lay per day during the good season. April, May, and June are, for our countries (Northern France), the good season, the time of the greatest breeding. During these three months laying is not interrupted if there is honey enough in store. . . . A swarm weighing 2500 grams (a little less than 6 lbs.), contains about 23,000 workers; but a swarm of this great weight is rare."

This same writer, speaking of the super, says that it is useless to use a super of a capacity of more than 7 kilograms (about 14½ lbs.). His supers also were of straw. This man also speaks of large hives:

"Some apiarists, using neither ekes nor supers, have adopted a hive of *great dimensions* [italics mine] with an interior capacity of 30 to 35 liters [1900 to 2100 cubic inches, about the size of the brood-chamber of the eight-frame L. hive]. This hive is not to be disdained; it does not swarm as readily as the others, but, giving larger swarms, it preserves an apiary in better condition than other hives."

Please bear in mind that this writer was a leader in France some forty years ago—in the very country where they now use hives of a capacity more than double the size he recommended, and which was then thought to be the only rational size. The work I quote from was in its third edition in 1865, and is yet considered an authority on many points, for the writer was as practical as a box-hive bee-keeper could possibly be. But probably he had never tried any thing larger than the hive he recommended; or if he had, it was perhaps as a "fad," and, as recommended by Hutchinson, "on a small scale" — too small for any results.

Before I go any further I wish the reader to remember that I am not writing in favor of large hives as a theory. We are using large hives on a large scale; we have been using them for thirty odd years, and have discarded the small hives only after long and persistent trial of both kinds, in hundreds; and our small hives were the ten-frame Langstroth hives of to-day. How this came about will be the subject of another article.

Hamilton, Ill.

[As stated at the outset by friend D., I requested him to write a series of articles on the subject of large hives from his standpoint, and not to be afraid to go over old ground; that, while the subject might be stale to him, it was not to others of us who have just begun to see the light.

It is a well-known fact that the Dadants have for years run their series of out-apiaries with little or no swarming; and if I am correct they produce as much or more honey, with a given amount of labor, as any other bee-keepers in the world. Now that extracted and comb honey have come down so low in price it becomes almost a necessity to cut down labor; and *if* there is a system by means of which swarming can be largely controlled and labor diminished, let us know what that system is.

The Dadants have a large following, not only in and around Hamilton and Keokuk, but also throughout almost all of France. I have talked with several of Dadant's neighbors, and they all assert that, after testing the large and small hives side by side, they have decided in favor of the former.

This article will be followed by a number of others, and we are sure our readers will find them to be interesting and profitable, because the Dadants have long been the champions of large hives; and it is to be presumed that they know more about them than any one else in the world.—Ed.]

A NEW HIVE.

Brood-nest and Super all One and the Same Thing; a New Application of Plain Sections; a Novel Idea, and yet One that may Bear a little Thoughtful Consideration.

BY W. K. MORRISON.

The readers of Gleanings need not get frightened. I am not going to order the ordinary hive to the scrap-heap. Perhaps my idea is not so original; but if not, it is revolutionary in a degree. It contemplates the banishment of frames, separators, holders, and other old-time contrivances from the apiary. Of course, this hive o' mine is not calculated to forward the business of supply-dealers; but what care we for supply-dealers? they can starve, or march along with the times. Then, again, this hive will put a stop to a good deal of bickering. Every bee-master will be able to adopt his own spacing; he can change it every time he buys sections. He can have two bee-spaces or no bee-space, just as it suits his fancy. He can produce extracted or comb honey (or both) without altering his hive furniture. Boiled down, the whole thing is a Miller-Hilton-Morrison section-case —eke would be a better name where the case is used indiscriminately either as a brood-chamber or a super. Instead of T tins, use narrow ribbons of steel (on edge) for the sections to rest on. There are two iron screws on the side and one on the end. The one on the end need not be so large as the others, and it is very useful. The inside contains nothing but sections with a follower.

The section I prefer is 6x4½x1¼, and each case contains 33 sections lying longwise, both for the brood-chamber and the super, as all parts of the hive are exactly alike. Such a section is not too narrow; possibly a narrower one would suit the consumer better. The pound of honey looks vastly bigger, and, above every thing else, the public want bigness. There is much to be said in favor of the narrow sections. The main point is, that they require no separators. With the screws properly adjusted, there is very little scraping needed. No coaxing is required to get the bees to go upstairs, as there is no preference, the whole hive being alike. Well-filled nice-looking sections are used, as comb honey not so good is put into the solar extractor.

A good many will find objections to this hive; but let them think about it and experiment the coming season. I can anticipate some of the most prominent objections. It will be said that such a hive encourages swarming. This will depend altogether on how it is used; but here let me emphasize the fact that this hive can be used properly only with full sheets of foundation of the different kinds. Deep-cell foundation is used for comb honey, and extra thin for extracted honey; but the *modus operandi* can be discovered only by experience. The bees breed and work in this kind of hive pretty much as they do in other hives. To control swarming, it is necessary to add room from below occasionally. Some practical men will say that good comb honey can not be produced without separators. This is true of the sections now in use, but it is not true of narrow sections, or what ought to be termed normal sections. The normal comb is ⅞ inch in thickness. Will any of your readers give a good reason why comb honey should be thicker?

An important point is to have the foundation fastened on all sides; and to do this I use a peculiar method. My plan is to cut the foundation into small triangles, and fasten two such pieces into each section. This insures rigid foundation that, no matter how the section may be placed, will neither sag nor bend.

In making the cases or ekes it is necessary to make the four corners very strong, as the pressure of the screws is very great. By proper adjustment, propolization is reduced to a minimum.

The general idea of the hive is not new. The Stewarton hive, of Scotland, which has been in use for over a hundred years, is founded on similar ideas. My own ideas on the subject were engendered by observing the working of the ordinary straw hive of our forefathers. I have seen excellent yields obtained by people who never used any other hive—as much as 220 lbs. from a first swarm. In pondering over the matter I came to the conclusion that there was only one objection to this kind of hive; viz., the honey is not got out in a marketable shape. The Scotch add to their hives from below to prevent swarming till these assume large dimensions.

If it had not been for the recent developments in the foundation business such a hive would not be possible. To bee-keepers who are all the while meddling with the brood-chamber this hive will be of no service; but to the man who has hundreds of hives to attend to, and who has no time to fool with his bees, it will be welcome. The summer labor is largely reduced if the apiarist looks after his business well and has all his cases stacked up ready for business in the spring before the rush comes on. Every bee-keeper follows his own pet plan; every locality calls for different management; but the underlying principles are the same. This hive calls for entirely new methods of working, that each one can find out only by direct experiment. It will be well for all to make a trial of this hive the coming season. One hive will be enough to test it. The experimenters will find that the bees like the hive, and live and thrive in it. Only a box hive is simpler, and yet is mobile enough for every purpose. The sections are easier to handle than closed end frames. There is no extracting to be done. The hive is warmer. It can be more readily transported than an L. hive. It can be made small or great, deep or shallow. It is a comb-honey hive and extracted hive all in one; also a good queen-rearing hive. It can do any thing any other hive can do, and more.

Devonshire, Bermuda.

[Some little time ago I said that Mr. Morrison would soon tell us something about a kind of hive that had no brood-frames, but which made use of plain sections to perform both the function of brood-frame and honey-box at the same time. The article above details the plan.

The description is perfectly clear save in one point; namely, that friend Morrison does not anywhere, that I can discover, tell *how* he separates the plain sections from each other. The fact that he uses thumbscrews to produce side wedging goes to show that he would have to have a substitute for the fences to hold the sections apart. As he says he uses no separators, I infer he would use some sort of stop or spacer to separate the sections, and that, when the same are wedged together, they would squeeze against these stops.

A hive as simple as possible—one cover and bottom, and one shell or body which might be used either as a super or as a brood-nest, might be a great boon to the farmer bee-keeper, and perhaps to those who handle colonies by the hundred. It goes without saying, that it would effect an enormous saving in expense, if such a thing could be accomplished. The question would naturally arise, however, Can a plain section honey-box, 6x4½x1¼ be used in lieu of a brood-frame? If such a thing is possible, then, of course, those plain sections that have had brood reared in them would always have to be used for that purpose; that is, they could not be used for marketing comb honey. Other supers would, of course, have to be refilled with clean, fresh, new plain sections ready to receive new comb honey; so that, after all, the bee-keeper would have his distinctive brood-supers and his distinctive comb-honey supers, although the construction of both would be identical.

I see just one objection to Mr. Morrison's plan; and that is, it abrogates entirely the extractor and extracted honey; for I assume

MR. WARDELL AND A BATCH OF HIS DOOLITTLE QUEEN-CELLS, REARED AT THE HOME OF THE HONEY-BEES. SEE EDITORIAL.

that no bee-keeper could afford to put up with these little boxes in the production of honey in the liquid form. Friend M. assumes that, with such a hive, one could produce either comb or extracted; but I doubt whether the average bee-keeper could produce extracted honey with such a hive, that could compete in the market.

If our readers do not thoroughly understand this form of hive, perhaps it may be well to have an illustration prepared. I can see it clearly in my own mind, and I doubt not that many of you see it as well.—Ed.]

* * *

RAMBLE 152.

Rambler has some Fun "in a Horn."

BY RAMBLER.

From my attitude at the close of the last Ramble I hope no one thought I found Mr. Dayton in the tank. Oh, no! Dayton was not there to be captured; he is too sharp to be captured in such a trap as that. But we did not give up the pursuit. Learning from Mrs. Dayton the location of the apiary, which was near a grove of gum-trees about a mile away, we immediately made a strategic movement against it. We advanced our skirmish-lines in various directions; and, owing to the ignorance of various foreign women, we were misdirected, and became hopelessly entangled in gum-groves, back yards, dog-kennels, and chicken-coops. A retreat was sounded, and we fell back on to the railroad station in good order. Here an honest Hibernian gave us the necessary directions, and we were soon charging down upon the apiary. Mr. Cowan commenced the bombardment of the works with his artillery (camera), but no Dayton appeared to defend it, and we took partial possession.

Mr. Dayton practices migratory bee-keeping. Like Mr. Brodbeck he goes out some thirty miles in a northerly direction, and camps with the bees in the hills where sage abounds. When the hill district is gleaned of all the honey it can produce, the bees are moved to the home location near the city, and here we found them. The hives were sheltered by a blue-gum grove to the south of it, and as a further protection there was a good growth of weeds around the hives. The bees seemed to be in a remarkably healthy condition. In the absence of their commander they put on their war-paint and gave us no rest.

Mr. Dayton has peculiar notions about hives as well as the rest of us, and has settled down upon a frame about 12 inches square, or perhaps a little less. I have to guess at the size. One peculiar feature of this hive is that there is no bottom entrance. There are two ¾-inch auger-holes a little more than half way up the front of the hive. Over these holes is affixed a half-round oblong perforated metal drone includer and excluder.

When Mr. Cowan and I looked upon the apiary it appeared as though it had recently been subjected to a removal, for the covers were nailed on securely.

Mr. Dayton well knows that he can get as much honey from a hive made from an old kerosene-case as he could from a hive made from mahogany. The hives are, therefore, made of cheap lumber, and the covers never shrink or warp; for if the hive is made from a kerosene-case the can is taken for a cover. When the bees are to be removed, all the operator has to do is to stick corks into the auger-hole entrances and they are ready.

A great many bee-keepers execrate a small frame for extracting. Well, here we have the smallest super yet. Trusting to my eye again for a measure I should say that it is about 12 inches in length and five in depth. Mr. D. believes that bees will commence storing honey sooner in a shallow than in a deep super; then if he has enough of them they can be rapidly storified. Though Mr. D. prefers these very small frames, Mrs. Dayton, Sr., uttered some strong objections. She also uttered the same for Mrs. Dayton, Jr. The complaint seemed to be that the bees filled the supers so quickly that it kept them extracting all the time. I had an idea that point was a very good one for the honey-getting qualities of the frame; but Mrs. Dayton thinks that a larger frame, though filled more leisurely, would produce quite as much honey with less labor to the apiarist.

There are also but few bee-keepers who would prefer an auger-hole entrance toward the top of the hive. While the most of us can find objections to this feature, the most unique was presented by a bee-man I met on the streets of Los Angeles. He evidently was using the Dayton hive, for he said, "I purchased three colonies of bees from a fellow who believes in putting the entrance near the top of the hive. The bees can not do as well in such a hive, for I have tried it to my satisfaction, and know. You see, the bees have to bring all dead bees, miller-worms, and all waste from the bottom of the hive to that hole; and just as they get up there with the load another bee coming in hits it a bump and away it goes again to the bottom of the hive, to be lifted to that hole again, and again knocked back. Those three swarms of mine actually spent the most of their time all summer trying to clean house, and finally gave it up in despair and swarmed out."

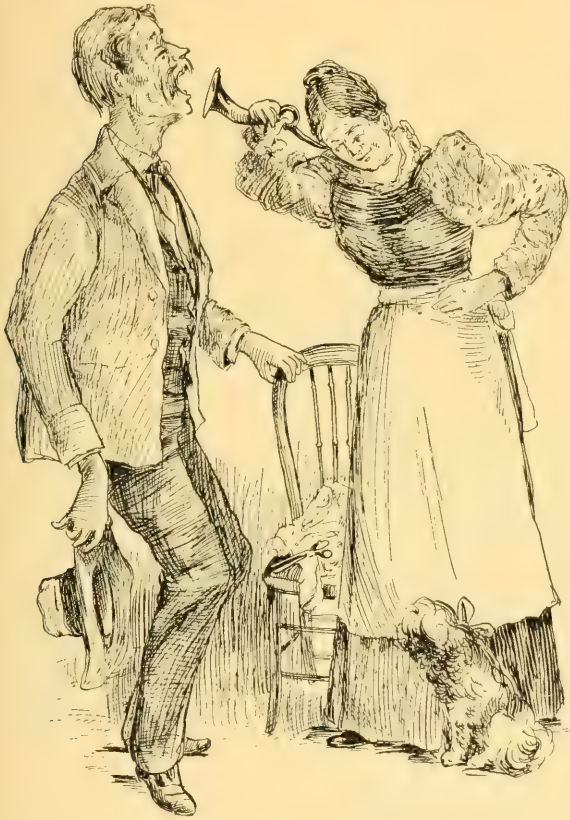
In spite of this adverse report, Mr. Dayton has good success with the hive. Mrs. Dayton, Sr., and Mr. and Mrs. Dayton, Jr., all have a hand in the business, not only in the production out in the hills, but also in the selling. The home market is thoroughly worked, and, having a large city in which to retail it, the honey is all worked off in that way.

Mrs. Dayton informed us that her son had built up his apiary from a small beginning, without capital, and had so far progressed that the house he was building owed its existence to the profits from the bees. Mr. Cowan and I (and especially I) disliked very much to be deprived the privilege of capturing Mr. Dayton, and discussing with him his methods of management; but fate and his legs ordered it otherwise, and we retired in good order to the city.

A few days after our campaign I met Mr. Brodbeck, and related to him our experience; and I asked, "Mr. Brodbeck, do you suppose Mr. Dayton left that building on account of the presence of a Britisher?"

"What! an American run for a Britisher? no, never; Mr. Dayton is not that sort of American; but, ha, ha! I know just what was the matter. Why, Mr. Rambler, anybody who knows you would run when he sees you coming. I don't blame Dayton a bit. Why! if I did not have my terrors always on hand to defend me I'd run too; ha, ha! get away, Rambler; get away. Here, Juno; here, Spot!"

"Well, now, see here, Brodbeck; you are rather rough on a fellow when it is a fact that I do my share of the running; and as to the Britisher, I would rather run with him than to run from him; but in another field of action I had a close call, and not long ago, and I tell you I did get away lively. See those two gray hairs in my mustache as the result? You remember that tall A. D. D. Wood, who was out here from Michigan not long ago?"



"Oh, yes! that fellow who was going to breed queens on the Island of Catilina."

"Yes, that's the chap; you see he and I were talking about Michigan, and he was regretting how he had left his wife and children in Lansing. I helped him regret a little, and then, says I, 'Any man who will leave a family away back east, and come out to California, doesn't think much of them.' Of course, I just meant it as a joke. I knew he thought just as much of his family as you do of those pug terrors of yours — ha, ha! never mind, Brodbeck; *never mind;* let the dogs rest—but Wood did not take it kindly, and he put up a job on me.

"You see, he had a friend here he called Cap. Wood and Cap were great cronies. Wood owed Cap 75 cents; and as I went within a block of Cap's residence when I went to my lodgings he requested me to hand the change to him, which I agreed to do. Now, Wood knew that Cap was not at home, and he knew that Cap's wife is as deaf as a post, and never a word did he say to me about it. I waltzed right up to Cap's door, with the innocence that every one has when doing a good deed. While waiting for an answer to the bell I noticed a sign on the door giving information that a face-mixer lived there; that is, if there are wrinkles on your face, nose too large, ears prominent, lips thick, all can be remodeled upon beautiful lines. My bell-call was answered by an amazonian woman who led the way silently into the ante-room.

"Said I, 'Is Cap Grinkle in?'

"But she kept right along across the room to a dressing-case and took up what I at first thought a blacksnake whip; but when she put one end of it into her ear, and held the other up to me, and laconically said, 'Talk,' I took the hint that it was a new-fangled ear-trumpet, and began to talk about the business in hand at long range; but she said, 'Don't understand; come nearer.' The instrument was an awful short affair; and, with the great drops of sweat rolling down my pallid cheeks, I edged up a little nearer; but, as inexorable as fate, she said, 'Nearer, nearer,' until my mouth was fairly in the instrument, and my nose within an inch of her nose. She eyed my face so critically I expected she might claim me for her long-lost brother, and joyfully throw her arms around my neck; and, Brodbeck, if she had I would have certainly fainted away; but with a trembling voice I went for the business in hand. Said I, 'I was sent around here to see Mr. Grinkle.'

"'Why, yes, we can take up wrinkles,' said she, joyfully; and, suddenly dropping her end of the instrument, 'I observe you have some prominent ones on your face; just cut out a little here,' said she, putting her finger on my face; 'pull the cuticle back, and the wrinkle disappears, and you look 20 years younger. Ha, ha!' She evidently thought I was going to laugh too; but I didn't; 'then your ears might be improved the same way; and I think your nose would be greatly improved by taking out that lump — he, he!' I didn't laugh this time either; 'can give you an operation in the morning for an even $25—he, he!' She talked rapidly, energetically, and with a highly professional tone. All the time she was talking I was desperately trying to talk through the instrument. You have probably heard of persons talking through their hats; well, the small end of that instrument had fallen into my vest pocket, and I was talking into that all the time; but just as soon as her professional talk had been exhausted the ear connection was restored.

"From her smiling appearance I suppose she thought I would say, 'Yes, I'll come around with that $25 in the morning;' but instead I said, as plainly as I could through the tube, 'Mr. Wood sent this money (holding up the silver) to your husband.'

"'Oh! I see,' said she in an entirely different and normal tone; and, looking upon my face with a $25 regret, she exclaimed, with moisture in the eye, 'Then you do not want those wrin—'

"'No, no!' I shouted, as I dropped Wood's change into her hand, and rushed unceremoniously out of the house and down the street, where I execrated the Wood family even unto the third and fourth generation.

"Did I get even with Wood? Well, I should say so. You see he was helping around a sausage-factory at the time, and he heard that I threatened to run him through the sausage-machine on sight, and he skipped out for Michigan; and I shouldn't wonder if he were skipping yet."

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of Wm. Woodley.

We give here a view of the "Home of the Honey-bees" at "World's End," near Newbury, Berks, the owner thereof being Mr. Wm. Woodley, well known to readers of this journal as the contributor of "Notes by the Way" to its pages. The photo from which our illustration is reproduced was taken some six years ago, but the hives occupy the same positions now as then, except that the straw skeps shown in the picture have gone the way of all things of a like nature. Close observation will show a small hive with a round hole in its center for an entrance, standing on the top of the twin hive in the foreground. This was the home of a nest of bumble-bees, the property of Mr. Woodley's son, who, when a lad, used to keep several such hives tenanted during the summer months with colonies of the genus *Bombus*. The figures shown are those of Mr. and Mrs. W., engaged in what will, no doubt, be a daily item of their bee-work during the busy season, viz., that of removing full racks of sections and replacing them with empty ones.

The house in the further corner, on the left, was erected as a combination summer and manipulating house, at a time when the old shake-off or brush-away process of removing finished sections was in vogue. We learn that many a retreat from troublesome or angry and vicious bees has taken place behind the

APIARY OF WM. WOODLEY.—FROM BRITISH BEE JOURNAL.

then thickly curtained doorway when removing honey, causing the work in the neighboring farmyard to be carefully studied in order to prevent "war" between the workers of the hives and those in the rick-yard adjoining. This trouble is now happily ended, and, thanks to the super-clearer, we are told that "peace" now reigns between both sets of workers, and honey is removed at any time "even when the neighbors are garnering their corn the other side of the windbreak." The portion of a building on the right is a Wesleyan chapel, but Mr. W. and family regularly attend Beedon Church, in the parish of Hampstead Norris, three miles from his own village.

In addition to the home apiary, with its over a hundred hives, shown in the illustration, Mr. Woodley has an out-apiary of fifty to sixty hives at Stanmore, a little over two miles from his house at Beedon. This entails considerable labor during the summer months, and the only help he gets in all the actual work of both apiaries is that of Mrs. Woodley, who may be taken as an ideal bee-man's wife. To use her husband's own words, "she has proved a true helpmeet in every thing pertaining to the work in the apiary, either in hiving and packing swarms, folding and preparing sections for putting on the hives, cleaning and glazing sections after removal from the hives, for show or market, and thus handling in some way nearly all the output for the past fifteen years from both apiaries. The only help we have is that of an old man to watch for and hive swarms into straw skeps of the out-apiary during the swarming season." Mr. Woodley further tells us: "The work of preparing the produce of our apiaries for market is by no means a small job, the bulk being in sections, while nearly every parcel is double glassed with lace-paper edging in our well-known style, and each year brings a wider demand for this form of 'putting up,' without advertising of any kind. In fact, the goods advertise themselves, and inquiries reach us from distant towns for a sample dozen, which invariably leads to repeat orders." That our friend makes bee-keeping pay seems fairly clear from the above; and although his prices may not be so good as in past years, he still holds his own, and for finest selected glazed sections still gets the good old price of $2.42 per dozen wholesale, and corresponding values for second and third grades.

The "home" which contains the leading spirits of this "Home of the Honey-bees" must also be a busy one, winter or summer; for, while the bees outside are enjoying their winter's rest, the master and mistress of the "home" are busy the year through, bee-work forming an important item at all seasons. The mistress, we are told, varies her household duties with glazing sections as the orders for these come in during the autumn and winter, and in spring and summer with the multifarious jobs incident to a busy life. The master also adds on to the labors of his trade the continual care of the bees; breeding queens, overhauling, cleaning, repairing, and painting hives, and all the hundred items incidental to the well-doing of a couple of apiaries two miles apart. A large correspondence also occupies a good deal of time in certain seasons; and when one thinks of the many journeys (to and fro) to the out-apiary (all on foot), not forgetting the packing of — we might say—tons of honey, so that it shall escape damage from the tender mercies of the railway porter, who will say that the bee-man —like his bees—is not "busy"? But this is not all, for we learn of Mr. Woodley that the public calls on his time are by no means few. Our friend is secretary and agent to a large branch of a benefit club, and vice-chairman of the parish council. He is also district councilor and guardian, and acting overseer for the parish of Hampstead Norris, besides being a member of the Council of the Berks Bee-keepers' Association, and of the Committee of the Newbury District Bee-keepers' Association. Mr. Woodley was born in 1846, and Mrs. Woodley in 1852, so that our busy friends are in the prime of life.—*British Bee Journal.*

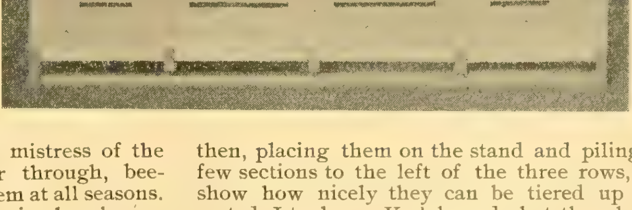
* * *

PLAIN SECTIONS.

Comb Honey from Fences and Comb Honey from Plain Separators; No Ribbed Comb Honey.

BY J. A. GOLDEN.

Mr. E. R. Root:—Your note was received on the 22d, referring to my letter of last spring in regard to my separator you speak of, of which I had sent you a photo. After reading your letter I went to the bee-house and took one of the middle rows of sections from the super containing this style of separator, took my knife, and clipped off the most of the propolis, took them to the machine, and cleaned them. Then I took one of the middle rows from a super containing the Root slatted separators, or fences, and cleaned them; then took one of the middle rows containing the plain separator, and cleaned them; then, placing them on the stand and piling a few sections to the left of the three rows, to show how nicely they can be tiered up or crated, I took my Kodak and shot the whole pile, and I inclose you a view of those sections the result of my experiment with the three kinds of separators, showing indisputable

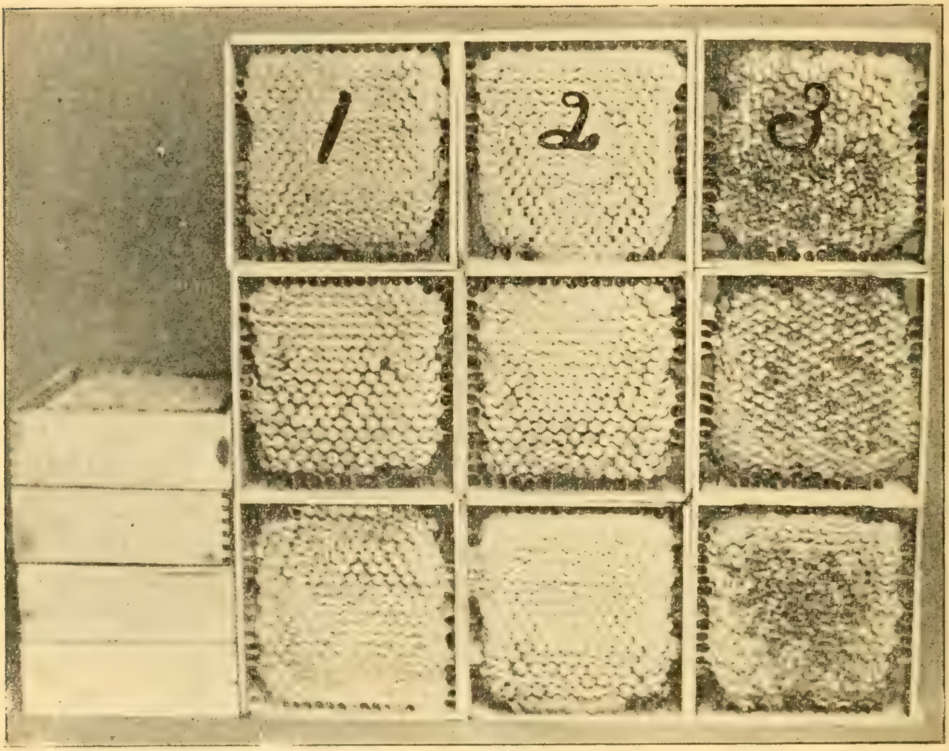


facts as they appear in the cut or photo referred to, and all having the same conditions from which this honey was produced, such as starters of foundation, strength of colonies, putting on and taking off, and a very discouraging season. The first row was produced between our separators; the second row between the Root slatted separators; the third row between the plain separators.

In presenting this experiment by a photo, to the readers of the bee-papers, I want it distinctly understood that the selection was made, as above stated. from the different colonies; therefore we represent the three just as they were produced; and while there appears such a sameness, there is one very noticeable feature. The sections produced between the plain separators show up much darker than either of the others. I should like to hear the opinions of our experts as to the cause of this difference, as all the bees were the same kind — Italians. Yes, I have my own idea as to the cause of so much difference in color, but I want to read the opinions of our learned apiarists — yes, and a footnote also, Mr. Editor; then I'll be honest in writing my opinion as to the reason above referred to.

There has been a good deal said about ribbed comb honey, as the result from slatted separators. So far I have not found any whatever with comb produced between the Root slatted nor my separator, which has a slot or slots from ¼ inch to ⅜ inch wide through midway, this separator having short cleats $\frac{7}{16}$ inch thick, with a saw-kerf at one end, and the cleats are glued and slipped on each side at the proper bearings, as shown. However, I use full strips at each end in place of the short cleats, as shown in the engraving, thus giving a much stronger and better separator, and, being easily constructed, any bee-keeper can make them.

But after all, so far as I have observed there is no separator that will excel the fence as manufactured by The A. I. Root Co. If the three-inch cleats or short cleats were beveled back to the first opening between slats at each end, it would give more good points than all other separators put together, or that's the way I look at it after this year's experience.



HONEY IN PLAIN SECTIONS VS. HONEY IN OLD-STYLE SECTIONS.

Now, all know from my past experience how I stand as to the plain sections. They do not contain nearly as much propolis; they are twice as easily cleaned; they present to me, at least, a better view, and I can clean on an average fifty to sixty sections per hour on the belt section-cleaner, and do the work nicely without the soiling of a single comb or dusting the honey. They also sell first every time—at least they do in our market; they are easily and quickly handled, and kept as safe from injury as any section I know of; and so long as these points hold good the writer will use no other section than the plain, and the fence separator, so long as he produces comb honey. We anchor our faith on experience and its results, and not on theories alone.

Reinersville, O., July 23.

[The contrast in the photo herewith reproduced is most striking. As strong an advocate as I have been of fences, I can scarcely believe that the difference, *on the average*, would be so great as that shown. If all of the honey had been produced in one colony the test would be better; but I infer that each lot of honey, 1, 2, and 3, was produced in as many different colonies. There might have been some difference in the bees; but whether there was or not, it stands to reason that the fence gives better ventilation, and, consequently, better and thicker ripening of the honey. This would, in all probability, give whiter cappings; but I should imagine the difference would be so slight as to be almost inappreciable to the eye, or, at least, not nearly so strong as that shown in the photo above.

It is a fact, however, that all the fence honey I have seen this year has been remarkably white and pretty, while a good deal of that produced by the old-style solid separators has been dark or discolored. If friend Golden has any other reason why 1 and 2 should be whiter than 3 we should be glad to hear from him; but if the fence is at all responsible for the difference, it must be because of the freer ventilation afforded.—Ed.]

FOUL BROOD IN NEW YORK.

An Appalling State of Affairs.

BY F. BOOMHOWER.

Dear Friend Ernest:—Your letter came to hand, but I have not had time to answer before. The care of so many bees of our own, together with the duties of foul-brood inspector of this county, has taken so much time that it has been hard work to find time to write before this. We have had a few cases of the disease in our home yard, and a few in one of our yards out of town. At present we have none that are diseased, but are fearful that we shall have our hands full of it this fall and next spring, as it has such a foothold surrounding us. We have more fear of diseased bees in the woods than we have from outside yards, as we can control and destroy diseased colonies in yards surrounding us, but can't control those in the woods. All the bees in the northwestern part of the county are practically wiped out, as it got such a start, having been running two years before I found out that the disease existed. If I could have known it in time, and had been inspector at the start, I could have eradicated it before it got such a start. All the bees in the vicinity of Central Bridge, Esperance, Sloansville, Carlisle and vicinity, are practically wiped out. It has reached Montgomery Co. on the northwest and Schenectady on the northeast; and unless we have a *good* hustling State inspector I don't know where it will end. The trouble is, so many farmers keep a few bees, and they don't care a straw for the practical bee-keeper who makes it his whole business; and, of course, those who make it a business have to suffer for the carelessness of the slipshod farmer bee-keeper, of which, I will say, this State has more to the square mile than any other four States in the Union.

The farmers are very ignorant, and they have it in their heads that it is only a trumped-up idea of the practical bee-keeper to clear the bees out of the country, so the larger bee-keeper can control the territory and have the whole business to themselves.

F. BOOMHOWER.

I find it about as dangerous to be inspector as it is to go to battle in war. I have been threatened with clubs and fence-stakes, and even have had them come at me with shotguns; but I am still alive, and carry out my examinations, and have compelled them to abide by the law in every case. New York needs a State inspector and a good law to back him up; then we shall have no trouble. Unless this is done the bee-keepers of this State will find out that they will have to step down and out for years to come. County inspection does not amount to much, as I will venture to say that not one practical bee-keeper out of a thousand is qualified to act as inspector. I have been in yards that were run by old experienced bee-keepers, and asked them if they had foul brood, and they would say, "No, sir; my bees are clear from the disease;" and upon examining them I would find it spreading all through the yard. In one case an old bee-keeper made complaint to me that foul brood was among his neighbors' bees, and wanted me to clean it up before it got to his yard, as his bees were not affected. I called upon him and asked him if he was positive that the disease was not among his bees. He said that it was not, for he had just been over them all and clipped the queens' wings, and all were clean from it. The first hive I opened was rotten with the disease. Out of 125 colonies, 60 were badly diseased.

I wish you could be here to see the bees rushing in the honey from buckwheat. Tons of honey are going to waste for the want of bees to gather it. The country is dotted with many white fields now in full bloom. In one yard in the edge of Albany Co. we have moved 24 colonies. I will venture to say that there are over 1000 acres of buckwheat within three-fourths of a mile. I never saw buckwheat looking so finely as now; but I have great fear that we shall have to stop bee-keeping or move out of the range of foul brood.

I have written this in a great hurry, for we have to rush with the bees, as there are only two of us, and four yards of bees to look after. I have one colony that has made 251 lbs. of white honey in sections, and it has now 112 boxes nearly finished from buckwheat.

A word in regard to J. F. Teel, page 584, as to how to start foul brood. I must state that I think Mr. Teel is mistaken. I am sure foul brood can't come from chilled brood. Twenty-six years of experience, wholly as a bee-keeper, makes me say that it is impossible to start such a dreadful disease as foul brood from brood that has died from exposure or cold.

Gallupville, N. Y.

[When I was in Schoharie Co. last fall I heard of foul brood all round, but did not think then it was so badly scattered as seems to be apparent from Inspector Boomhower's report. But, dear me! what can a good inspector do if his territory is limited to *one county?* Suppose, for instance, that the dread disease is working over into Albany Co. and the other counties adjacent. It ought to be followed up just as vigorously in those counties as in Schoharie. Nay, further: a law should be passed at once whereby an inspector will have jurisdiction over the *whole State;* and to make the law effective there should be an appropriation of at least $500, as in Wisconsin. The bee-keepers of York State should bestir themselves at once. The State and county associations should immediately consider this, and make such arrangements as will be necessary to secure the immediate passage of a law similar to the Wisconsin law. GLEANINGS will be glad to lend its columns in any way possible to bring about the desired legislation.

I know of no better man to lead the fight than Mr. W. F. Marks. Mr. M. has already rendered some quite distinguished service in the matter of forcing a measure before his State legislature, and in securing its final passage. He knows well how to "pull the ropes," and I hope that he or somebody else the York Staters may appoint to lead them will see that something is done at once.

The regions of Montgomery, Seneca, Schoharie, Otsego, Tompkins, and Albany Counties represent some of the best bee country in the world. Now, if it is a fact that foul brood has got a fearful start right in the heart of that region, it is high time that the bee-keepers of the Empire State should rise in their might and stamp it out.—ED.]

THE INVENTOR OF THE QUEEN-EXCLUDER.

His Giant Hives and Queen-cages, etc.

BY F. GREINER.

Now to return to Mr. Hannemann again. He was so taken up with the superiority of his system and management that he could see but little good in any other; and, being ignorant as to the conditions in other lands, notably North America, he showed mistrust of every thing that was reported from here. He says, for instance, at the close of an article of his, written in 1879: "And while my results, as shown, seem meager by the side of such yields as are reported by an Adam Grimm, I am satisfied with them because mine really exist. Grimm's are only on paper." Our older readers will remember who Adam Grimm was. He was a pioneer in American apiculture; he made more money with bees than any one else — at least in his time. His writings always had the mark of honesty upon them, and I never heard a word against his character. I took it upon myself to make a reply in the *Bienen Zeitung* (this must have been in 1880), explaining to the German bee-keepers Hannemann's alleged mysteries of American bee-keeping. Hannemann, for instance, couldn't comprehend how there could be room for 27 boxes weighing 130 lbs., on a hive having 24 x 15 inches of top surface. Grimm had reported such a yield from a single ten-frame Langstroth hive, such as was then commonly used. Hannemann had evidently never heard of *tiering up* nor of removing full boxes and replacing with empty ones, so he could not understand how the thing was possible, and at once jumped at the conclusion, "It is all a lie, a great humbug," and, worst of all, says so before the thousands of German readers. He reasoned thus:

"One hundred and thirty pounds of comb honey would occupy a space of 3500 cubic inches. To give this amount of room to a colony occupying a hive of 2500 capacity is an impossibility, as every one can see. Furthermore, it is impossible for one swarm of bees to fill such a space with combs and honey outside of the hive. It would require, with a six-weeks continuous honey-flow, 9 kilograms (19¾ lbs.) of worker-bees. No queen is capable of producing this amount of bees in so small a hive, nor, for that matter, in ever so large a hive."

Well, a good many of us who have been long in the business have now and then had these phenomenal years and yields. We know from experience that it is possible for a colony to fill a space of 3500 cubic inches with combs and honey. We have had these cases under our own hand, and what we have seen with our own eyes can by no theory be reasoned out of existence. Facts are stubborn things.

Another point Mr. Hannemann was trying to make out of Grimm's reports was that the climate must be unsuitable for bee-keeping here, for a neighbor of Grimm had 99 colonies out of 100 frozen to death one winter. Here Mr. Hannemann overlooks the fact that, although a country may have very severe winters, and actually freeze the bees (a condition I can not imagine, however), yet the summers may be warm, flowers may be plentiful, and the meteorological conditions very favorable for the secretion of nectar. There is no doubt that a mild climate is favorable for the wintering of bees, and most of us wish we had that; but what of the hard winters? Are we helpless? Why has God given us our intelligence? Have we no means to combat the zero weather? Why! if necessary we could bring about a condition of 90 degrees in the shade every day in the year, as Herr Weygandt has proven with his heated bee-house. If only the summers are conducive to the welfare of our bees, and the honey-producing blossoms are present, the winter is no objection. Why, I believe we could keep bees away up at the north pole if we could only get there.

Mr. Hannemann expresses his opinion of the North American and his surroundings like this: "I esteem him highly as a man of progress; but to carry on apiculture successfully there are obstacles in his way that, with all his intelligence and ingenuity, he can never (?) hope to overcome. With steam and machinery he may be able to make very accurately his hives, etc.; but to stock them up requires a good deal of money, so it seems; and, after being stocked up, it requires the right kind of man, who must be possessed with love for and knowledge of the bees; he must have an extensive experience, etc. The climate must be suitable for bee-keeping so the colonies will send out a goodly number of swarms; and when these are on hand they must be massed together by forming giant colonies in order to obtain the best results. This is the only way."

The reader may ask here, "Why bring up all this after twenty years have passed?" Does it not show that even the wise are blind sometimes, and that half of the people do not know what the other half are doing? I think our good old friend A. I. R. could draw some valuable lessons from it, and bring them to our understanding. I write the above, principally in the hope of entertaining, perhaps amusing, my bee-keeping friends, and to bring out some good points that may be of value to some of them.

I have no old grudge against friend Hannemann, although I admit I felt somewhat indignant at first. That has all past. I now feel only my indebtedness to him. He was probably excusable for holding an adverse opinion of us American bee-keepers.

In criticising the Hannemann system, and in comparing it with our method, I wish to say this: The methods he pursued were probably all right for his particular environments, and much ahead of any thing else known to him them; but after all, the Yankee could and would greatly improve upon them. We would not only use the extractor, but also furnish the bees much if not all the combs needed. I am sure it would be impractical to use the giant hives and the cages *a la* Hannemann for the production of section honey, on account of the pollen that would probably be stored in many of them. But should we pursue the Hannemann method to the letter we should probably make an article of commerce of the pollen harvested, and find a way to preserve it. I think I could sell some of it to friend Perry, friend Olmstead, and others, who are in need of it for spring feeding. A further improvement of the Hannemann system would be the liberal use of comb foundation, particularly with the view of preventing the raising of the millions of useless drones that have to be sifted out and disposed of. Of course, they would make splendid food for ducks, and I would certainly make use of them in this way if I raised them at all. Finally, I would adopt the Langstroth or Berlepsch frame instead of the bar, *a la* Dzierzon, thus preventing the mussy, disagreeable work of cutting out the honey, etc. All these are improvements of the Hannemann system, which suggest themselves to the thinking mind; with them, I believe, Hannemann might double the yield that he has been able to obtain.

I wonder what he would think of such yields as Mr. Levesy reports in *American Bee Journal*, page 452, of a bee-keeper in Salt Lake Co., Utah—an average of 363 lbs. of extracted; or the yield of J. P. Israel, the champion comb-honey producer of the world, reported to be 662 lbs. of comb honey per colony. Such yields are phenomenal indeed. Are they true, or only "on paper"? If Mr. Hannemann has seen the photos of our honey exhibits at the Centennial, or their reproductions, he may now conclude that the North American, with his intelligence and proverbial ingenuity, can well overcome obstacles that seem unconquerable to him, which, however, existed largely in his imagination. If that does not convince him I am afraid nothing will.

Naples, N. Y., July, 1898.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

FROM THE EGG TO THE PERFECT BEE.

Question.—I see by the bee-papers that some seem to think that the bee remains in the larval form only about four days, while Dr. Miller put it at five days in a late number of GLEANINGS. Which is right? In some of our operations with bees it would sometimes make quite a difference with our calculations if bees hatched sooner than we expected, especially so in queen-rearing.

Answer.—Well, when Dr. Miller makes a positive assertion in any matter it is quite apt to be correct; but, as a rule, we find him saying, "I don't know." And this saying of his often reminds me of a story; and as I have not told any stories in any of my late articles I think the editor will excuse me if I tell one at the beginning of this reply instead of at the end, as is my usual custom. The story is about the late Henry Ward Beecher, who used to say that a problem in mathematics taught him *reliance*, and he told this story to prove it:

"My teacher in mathematics taught me to depend on myself in this wise: I was sent to the blackboard, and went uncertain, and full of whimpering. 'That lesson must be learned,' said my teacher, in a very quiet tone, but with a terrible intensity. All explanations and excuses he trod under foot with utter scornfulness. 'I want that problem; I don't want any reasons why you haven't it,' he would say. 'I did study two hours.' 'That's nothing to me; I want the lesson. You need not study it at all, or you may study it ten hours, just to suit yourself. I want the lesson.' It was tough for a green boy; but it seasoned me. In less than a month I had the most intense sense of intellectual independence and courage to defend my recitations. One day his cold calm voice fell upon me in the midst of a demonstration. 'No.' I hesitated, and then went back to the beginning, and on reaching the same point again, 'No!' uttered in a tone of conviction, barred my progress. 'The next!' and I sat down in red confusion. He, too, was stopped with 'No!' but went right on, finished, and, as he sat down, was rewarded with 'very well.' 'Why,' whimpered I, 'I recited it just as he did, and you said 'No!' 'Why didn't you say yes, and stick to it? It is not enough to learn your lesson; you must *know* that you know it. You have learned nothing till you are sure. If all the world says no, your business is to say *yes*, and prove it.' "

And now, Dr. M., without wishing to give any offense, allow me to say that quite a number have written me during the past, in substance, "Why doesn't the doctor say yes, and prove it?" And as our correspondent says you stated that bees were in the larval form five days, we want you to "prove it" if you did say so; for, from all of my experience, I am led to say "No" to the five-days theory, and right here I am going to try to prove the "No" for the readers of GLEANINGS and the questioner; and if the opposition prove differently, I am going to do still further experimenting along this line of "from the egg to the perfect bee" till the *right* comes uppermost.

Quinby told us in his "Mysteries of Beekeeping Explained," which book was published about 1865, that the egg, as laid by the queen in worker-cells, hatches in three days to a larva; this larva is fed by the nurse-bees six days, when the cell containing it is sealed over, remaining thus for twelve days, during which time it undergoes the change "from caterpillar to butterfly," when the covering to the cell is eaten off and it emerges a perfect bee, being a period of 21 days from the laying of the egg to the perfect bee, making a little allowance for the weather, as very warm weather hastens this development to a limited extent, and cold weather retards the same.

Always being desirous to know things for a certainty, so far as they can be ascertained, I conducted experiments which proved to my satisfaction that Quinby was correct. I placed a frame of nice worker comb in the center of a populous colony about June first, and looked at it very often till I found eggs in it, which date I marked on top of the frame. In about two hours less than three days I found larvæ hatched, and in six days and three hours the first larvæ were fully sealed over. Twelve days thereafter I found a very few bees just biting off the covering to their cells, where the first eggs were laid.

From this trial I was entirely satisfied as to the correctness of Quinby till a few years ago when I was withstood by a bee-keeper of considerable prominence who said that bees are in the larval form but little more than three days. I was about to contradict the statement, but concluded that I would not, as I had made only the one experiment; still, I could not think that both Quinby and myself were wrong. So I went to experimenting again, the weather being extremely hot at this time, while it was moderately cool when I tried the first experiment. The result during this hot weather was very nearly three days in the egg, five and three-fourths days in the larva, and eleven and one-fourth days in the pupa state, making twenty days in all; and this is the shortest period of time I ever knew workers to emerge from their cells after the egg was laid, under any circumstances. Besides this, I have many times cut out all queen-cells but one, from colonies seven to eight days after a prime swarm had issued from them, and had said colonies build queen-cells over larvæ still unsealed, and, when these queens were old enough to hatch, send out a swarm with the queen hatching from the cell I had left when the rest were cut. It may be possible in the South, with extreme heat, for bees to hatch in less than twenty days from the laying of the egg; but I doubt about that time being reduced very much, even under such circumstances. On the other hand, I have known very nearly twenty-four days to elapse with weak colonies and cold weather while the bee was developing. But twenty-one days is the rule, according to all of my general work among the bees during the past nearly thirty years, and this rule can be depended upon in governing all of our methods of dividing bees, etc., where it is necessary that we should have some knowledge in these matters. The time of the year when the development of brood is most retarded by cool weather is in the fall, and when most accelerated by warm weather in May and June. The reason for this is that bees are very active in spring and early summer, while they become quite sluggish on the approach of winter.

In conclusion, perhaps I should say that I find the rule with queens to be, three days in the egg form, five and one-half days in the larval form, and from seven and one-fourth to seven and three-fourths in the pupa form, making an average of sixteen days from the egg to the fully mature queen.

THE HIVE OR THE MAN.

Question.—I have just entered the ranks of bee-keepers, and am very much interested in hives. A few miles on one side of me is a man who keeps bees in the American hive. On the other side of me, at about an equal distance, lives a man who keeps bees in the Langstroth hive, while in still another direction is a man who keeps bees in a hive of his own invention. During the present season the man having his own hive has secured a yield of about 30 pounds from each hive, on an average, while neither of the other two, with the American or Langstroth hives, has secured any, and they tell me if their bees secure only honey enough for winter they will do well. The man with his own hive claims that neither the American nor the Langstroth hive gives any great yields of honey; and had the other two had and used his hive they would have secured honey the same as he did. Is this claim right? If not, why did he secure honey while the other two did not? As I am beginning in bee-keeping, I am anxious to start with the right hive, so I may meet with success.

Answer.—From the above and other numerous questions asked, and the hosts which are clamoring for the *best* hive, it would seem that all one had to do was to get one of that neighbor's *own* hive, or the Gallup, Root, Langstroth, American, Quinby, Hoffman, Heddon, or some other good hive, to meet with certain success in apiculture. No matter how poorly attended to, if we only have a *good* hive we certainly shall have honey to sell and give away. From the many failures in the bee-business, and the shipwreck ending in disaster of so many who start out joyously when embarking in this business, it would seem as if they depended simply on using or having their bees in good hives. While a good hive has *much* to do with the results of bee-keeping, the *man* has *much more* to do with success or failure. Do men buy choice animals of any kind and let them take care of themselves, expecting a profit from them? No; they spare no pains to have them properly cared for, and give them every chance in their power that looks or tends toward success. Yet those same men, should they embark in the bee business, will expect a large income from bees if they only have them in a good hive, if they do not do any thing for them once in six months. As well provide a good stable for choice stock, and then let them shirk for themselves, expecting a profit from them. Men do not do this way with the stock, and why should they with the bees? The idea that bees "work for nothing and board themselves" must be banished from our thoughts before we secure much profit from them. Successful bee-keeping means *work*, and lots of it, for a man with brains enough to know that he must leave no stone unturned that tends toward success. A good hive in the hands of such a man, with a good season, is a power which rolls up tons of honey, and shows to the masses of people that there is money in the bee-business. Such a man will have his bees in readiness for the honey-harvest when it comes, and do things in just the right time to secure the best results. I am often asked, "What advantage have any of the movable-frame hives enumerated above over a box hive?" Much, every way, in the hands of a skilled apiarist, but none at all with the man who never handles the frames to take advantage of the benefits to be derived from a judicious spreading of the brood, by making the strong help the weak; by giving stores, from those having more than an abundance, to the needy; by cutting out queen-cells to keep from ruinous overswarming, etc. What are movable frames good for, if not for the above purpose? and yet we have those all over the country who do not take a frame out of a hive once a year, and call themselves bee-keepers, and wonder why they don't succeed as Mr. A does. They have the same hives, they are sure.

We come along some morning and say, "Good morning, friend B. How do the bees prosper?"

"Pretty well, I guess; I have lifted the hives, and they all feel quite heavy. See here; lift this one. There, is not that a good one? I'll get lots of honey from that one this season."

We step to the entrance and see very few bees flying. When we ask, "How many square inches of brood is there in this hive?" he says, "Oh! I don't know. I have not had the frames out since the bees were put into the hive. I do not believe in fussing with bees as Mr. A does."

Thus we find plenty of bee-keepers, or those calling themselves such, all over the land. Is it any wonder we have plenty of candidates for blasted hopes? Mr. B does not seem to realize that it is just this "fussing," as he calls it, of Mr. A that makes his success so much greater than his own. I do not want it understood that a person is to be kept constantly overhauling his hives to make bee-keeping successful. No, not that. What I mean is that, when a gain is to be made by looking inside of a hive, do it, and at just the time it is needed. Spread the brood in just the right time, put on the sections in just the right time, cut out the queen-cells in just the right time, and so on with all of the work of the apiary; and do not keep any more colonies than you can care for and have every thing done in good order. Better results can be secured with thirty colonies properly attended to than with one hundred poorly attended to, or, what is often the case, not attended to at all. What I want to impress upon the minds of the readers of GLEANINGS is this: That a thorough, practical apiarist will succeed with almost any of the frame hives now in use, while a careless slipshod man will not pay his way with the best hive ever invented.

My bees have done the best this season they have for the last eight years.

Blaine, Wash., Aug. 17. J. B. RAMAGE.

EDITORIAL
BY E. R. ROOT

I PRESUME that, while this issue is going to press, A. I. R. and yours truly will be among the bee-keepers at the Omaha convention that is to take place on the 13th, 14th, and 15th instant.

GRAVENHORST DEAD.

JUST as we go to press we are pained to learn of the death of that skillful bee-keeper, celebrated author, and accomplished gentleman, C. J. H. Gravenhorst. He died at his home in Wilsnack, Germany, Aug. 21, aged 75. Particulars later.

A CORRECTION.

IN my answer to Mr. Doolittle, page 625, referring to deep and wide entrances, I said, "One swallow does not make a summer, neither do two or three of them," implying that Mr. D. had tried only three colonies, when in fact he had tried ten with deep entrances, and ten with the regulation kind, with the result that three of the former swarmed. I am glad to make this correction, although I still believe that the test even then was too limited to be conclusive, as compared with the tests made by my neighbor Mr. Vernon Burt, who has tried them on 300 colonies for a period of three years with the greatest satisfaction.

HEAVY TESTIMONY IN FAVOR OF THE PLAIN SECTIONS.

A SHORT time ago we sent a lot of honey to the Columbus Commission and Storage Co., Columbus, O. It so happened that there was just one case containing honey in plain sections. These people had never seen honey so put up before, and it is evident they had not seen any of the "discussion" regarding the new sections. All they knew was they had one case of honey that would outsell any other case in the lot. Well, here is their letter, which will speak for itself:

> There was one case of the Elsie, Mich., lot that we opened this morning, that had 15 sections. The case was marked "plain sections," about 12 pounds net. This was a very fine case of honey, and brought 15 cts. We thought we had more of it, and showed it to some of our trade; and the result was, we took orders from every man who saw it, for two or three cases. Do you know where we can get some of this? Are all "plain sections" short-weight — that is, less than a pound? We should like to get a lot of this kind, and can use anywhere from 100 to 1000 cases.
>
> THE COLUMBUS COMMISSION & STORAGE CO.
> Columbus, Ohio.

This only goes to prove that honey in plain sections, in some markets at least, will outsell honey in old-style sections. This statement was put forth by S. A. Niver, by L. A. Aspinwall, of Jackson, Mich., and others, last winter. But here it is verified by unprejudiced parties in at least one market—yes, they actually want to get 100 or 1000 cases of honey in plain sections.

MY TRIP EAST AGAIN.

I HAVE just returned from a trip of two weeks to the East, part of the time at the seashore.* Mrs. Root stipulated this time that I was not to see any bee-keepers, but just rest and recuperate. I felt "tiptop" while in the harness at home; but after I got away to "rest and recuperate," at Sea Girt, N. J., I was sick nearly all the time. Change of water, and hot climate, I suppose, were the causes. I said, *nearly* all the time. Well, I did steal away for two days to visit with Mr. W. A. Selser, at Philadelphia; and at his home, Jenkintown, I had the pleasure of meeting some thirty or forty bee-keepers for a pleasant chat and exchange of ideas. Some of them thought they would tire me out, as they kept me on the floor nearly two hours, answering questions; but I never felt better—in fact, I was feeling in good trim all the time I was with my good friends. I had been sick prior to going to Philadelphia, and had recovered sufficiently to get away. After leaving my bee-keeping friends, and returning to the sea-coast, I was sick again most of the time. A doctor in the East told me I was all run down, and gave me some good advice—not to work so hard; but now that I have returned home, I am feeling strong and well. I believe it agrees with me to get among bee-keepers and the hum of the busy bees again; and I am beginning to feel that there is no place quite so bad as away from home when one is sick.

No, I am not all run down—at least not from overwork; but give me a change of water, a change of diet—crabs, lobsters, and the like—and put me in a hot climate—well, it does not usually take long to make me look more like a cadaver than like a living healthy man, which I feel I am.

AN IMPORTANT FACTOR IN REARING QUEEN-CELLS A LA DOOLITTLE.

SOME years ago, when our Mr. Spafford tried the Doolittle plan, he failed; and a little later, while our Mr. Wardell was on a vacation, Mr. S. tried his hand at it again, but with no better success; but on inquiry I learned that Mr. Wardell feeds slowly all the time the cells are building, while Mr. S. did not. This may and probably does explain our earlier failures, and I think it very important to emphasize the point right here. It begins to be evident now that nearly all of the leading queen-breeders are using the Doolittle method of raising queens; and the result is that first-class queens are sold for very much less money than they were ever sold for before. The great big beauties that have been going out from our yard would, it seems to me, please the eye of any lover of fine queens. Why, they are so big that it is with difficulty they can turn around in the compartment of an ordinary queen-cage.

As Mr. Wardell has made a success of the Doolittle method, I take pleasure in giving you a Kodak view of him, together with a batch of cells that he had just taken out of one of his hives. He now, I believe, prefers to rear "cells" on a stick (shown on p. 647), as it saves the mutilation of good comb. The view was taken with a pocket folding Kodak; and as it has since been enlarged by the engraver to nearly twice its former size, the result is certainly quite remarkable. The likeness of Mr. Wardell is most excellent, and the factory building in the background can not be other than natural.

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*Copy for last issue was prepared two weeks in advance.

Mr. Wardell showed me two colonies that had already completed 100 cells, and they were still working on another batch; and, what is more, he expects to keep them right at it as long as the weather permits. Both of these colonies have old or defective queens; and when he was going through the apiary he discovered, early in July, that each of them was rearing cells as if about to supersede the old queens. He marked these to rear cells, cut out the cells already in the hive, and gave each a batch of Doolittle cell-cups. After the light honey-flow ceased he kept feeding each slowly while cell-building was going on.

He has other colonies with old queens that are kept at the same business of rearing cells, and in the same way. Whenever he finds a colony about to supersede its queen he sets it aside for cell-building exclusively. Such colonies he considers extremely valuable, as, for aught he knows, he can keep them building cells clear through the season. I should not have supposed that this was possible; but facts are stubborn things.

But not all cells are reared in superseding colonies, as we may call them. He has other stocks that he prepares in this way: A colony is made queenless and broodless. At the same time, he begins gentle feeding for the purpose of stimulating. A batch of Doolittle cell-cups, with grafted larvæ, after the lapse of two or three days is then put in, when, presto! they begin work with a hearty good will; but such colonies can not be used for rearing more than about two batches of cells, says Mr. Wardell; and, all things considered, he prefers colonies with queens to be superseded.

DEATH OF MILES MORTON.

In my last trip to the East I had intended to stop off, either going or coming, at Groton, N. Y., where Miles Morton lived—a man who, probably, has had more experience with fences than any person now living, and from whom, in fact, I had gained nearly all my inspiration and knowledge of fences in general. After one year's experience with them ourselves, and after having looked over letters from all quarters of the country, some of them suggesting slight improvements, I had hoped that I might have a further talk with our friend, and thus, if possible, bring the fence nearer to perfection than it was during the season of 1898; but at the very time I expected to make my call at Groton, August 30, I was taken sick, as I have explained in another column, and therefore wrote Mr. Morton, stating that I should, perhaps, have to call a month later. A day or so afterward I received the following sad note, which I place before our readers:

Dear Friend—It is with a sad heart I write, for I have to tell you that our dear friend and brother, Miles Morton, passed over to join the "great majority" on Sept. 1st. He anxiously looked for your coming as you wrote, Aug. 30th and 31st, and we very much regret your not coming. Relatives, friends, bee-keepers, and the whole community have met with an irreparable loss. His health had been very poor all the season, but he had been able to direct the general method of caring for our bees, and had many little kinks looked up to show you when you came. I will try to get some of them on paper for you when a leisure moment comes in; but it's a case of hustle with me just now, getting crates made, polishing sections, getting honey off, etc. Then Dr. Mason wants me to write something for the convention, and I haven't had time nor steady head enough for a month past to try it. S. A. NIVER.

Groton, N. Y., Sept. 6.

Mr. Niver, his brother-in-law, had written me that Mr. Morton was quite poorly, but I had no idea he was near the point of death; and I judge that even his immediate friends and relatives did not think the golden chain would be broken quite so soon.

MILES MORTON.

Mr. Morton was one of the keenest, brightest bee-keepers in New York. He was a fine mechanic of the Dr. Tinker order; and back of his beautiful home he had a nicely equipped little shop where he loved to tinker, and make things for his bee-keeping friends. He was a natural born mechanic, as could be easily seen from the exact workmanship and beautiful finish of all he did; and bee-keepers for miles around used to go to Mr. Morton for their supplies.

I have traveled pretty well around that section of country, and everywhere Mr. Morton was spoken of in the highest terms, not only as a successful bee-keeper, but as one who made the best supples in the world.

Well, it was this same Morton who has been using fences for the last twelve years, and in his quiet way has been supplying his friends and neighbors, not only with fences, but with every thing else in the line of bee-keepers' supplies.

It will be remembered that I gave a view of his portable house-apiary—a sort of building that can be knocked down, laid on an ordinary wagon in the flat, moved to another location, and set up for the bees again. A view of this house-apiary is given on page 807, 1897; and that our friends may recall what manner of man he was, I take pleasure in presenting to you a picture which we gave in these columns nearly a year ago. Many of our friends will remember him as being at the Buffalo convention. It was Niver at this convention who told me that I must come and see his brother-in-law. He would not take no for an answer—I had just *got* to go. Mr. Morton mildly expressed his request, but was not quite so emphatic as his brother-in-law, who insisted that Morton could show me many valuable kinks in bee-keeping. Our own columns of the last year or so proved the correctness of Mr. Niver's opinion.

NOTES OF TRAVEL
BY A. I. ROOT.

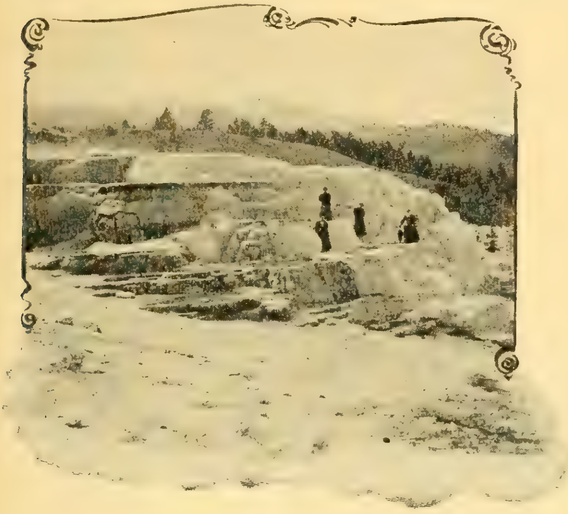
While passing through Gardiner Canyon on my wheel, away up on the pinnacle of a rock I saw a huge bird standing. From the pieces of sticks that projected from the point of the rock I guessed the bird had a nest there, and surmised it might be an American eagle. I was afterward told that it was Eagle Nest Rock, and that the eagle raises one or more broods there every season regularly. We give a cut of it below.

EAGLE NEST ROCK, GARDINER CANYON.

Some of the cliffs near this rock are fully 1500 feet above the roadway—more than a quarter of a mile straight up. Just before reaching Mammoth Springs, in the twilight I saw a great white mountain. Yes, it was almost ghostly white; and then I heard a rush of many waters. Said I to myself, "Is it possible that these springs have built up such a hill as that?" And no wonder; for it is from 1000 to 1200 feet high, and covers acres in extent. We know this mountain was built up by the hot springs, because close by the hotel there is a pillar called Liberty Cap. This is 52 feet high and 20 feet in diameter, and in the top there is an orifice through which the water used to boil out. There is something exceedingly funny about the way the water builds up these structures. In this special locality near the Mammoth Hot Springs the deposition is principally carbonate of lime; and where the spring happens to run just fast enough, and not too fast to favor building up a mound, the deposit under the most favorable circumstances will be a sixteenth of an inch in four days. You see, if the water came in faster it would break through and run down into the river; if it comes just fast enough and no more, it builds up straight like Liberty Cap. We give you a view on next page illustrating the way in which Minerva Terrace and other terraces were built up.

The hot water, charged with the carbonate of lime, evidently, ages ago, came out down by the river. Then when it ran over the sides of the basin, the mineral was deposited, raising the walls. This made it flow over at some other point until this point was raised in a like manner, and so it kept working clear around on all sides of the pool. Sometimes, however, when the flow was sufficiently large, it would flow through in one spot until it formed another pool lower down. The gradual tendency was to keep on raising the walls and making the surface of the spring move gradually up. In some places this deposition is soft, so it shows your footprints. In others it is as hard as flint. Sometimes there will be a beautiful fretwork something like coral that looks as if it would be crushed if you touch it. To your surprise, however, you find it bears your weight without yielding even enough to show where you set your foot. Now, remember we have these beautiful spots carved by Nature's continual toil. They are very pretty indeed. When formed of salts of lime they are snow-white. No egg-shell ever equaled in whiteness and delicacy this handiwork. But Nature evidently seems to say, "Now, this is not enough to please the children of men, and so I will show them some of my skill in coloring." A great deal of this coloring is of yellowish tint resembling sulphur; but occasionally it shades off into the most brilliant orange. Then we have all shades of purple and blue. But this is not all. The water, which is almost as transparent as the air on a clear day, is often tinged with the most brilliant hues, and hence the names, Turquoise Pool, Prismatic Lake, etc. A great many of the places are named on account of the tints; for instance, Orange Geyser, Angel Terrace, etc.

Well, that is not all. As the waters flow from the spring and get cooled off, a sort of vegetation begins to line the bottom and sides of the rivulet. This is a sort of algæ, and it looks like flowing hair (or "silken tresses" if you choose) more than a plant. And these algæ also show brilliant shades of green. As the ripples move through these tresses in the colored water, with the carved and colored walls lining each side of the rivulet, it seems like a fairy tale or a creation from the Arabian Nights.



MINERVA TERRACE.

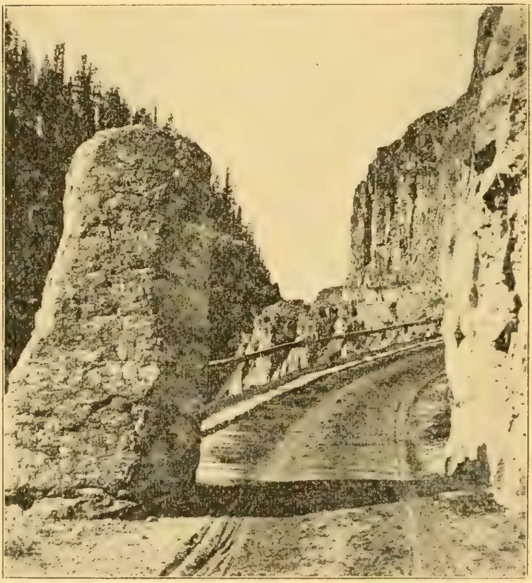
Perhaps you have gathered already that I am greatly in love with babbling brooks. Well, here I was treated to visions of babbling brooks such as I never dreamed of before. Suppose the hot water starts to run off down to the river from one of these boiling hot springs. As it cools off it drops the minerals all along the way, and it drops rather more on the edges of the stream than anywhere else, because the edges are thinner, and are cooled by striking the comparatively cool wall. Well, this gradually builds up so as to make a little rise, as it were. The stream starts out from the spring with the bottom and sides of the brook of snowy whiteness. As they get cooler it begins to take on a shade of brilliant yellow; then orange further down stream, then red. Now the algæ commence to grow with a brilliant shade of green; and sometimes an obstruction forces the little brook to overflow on one side; then we have a little branch with all the same variations and colors.

A man at Mammoth Hot Springs carried the hot water in a little ditch over to his garden where he has a greenhouse. I followed the ditch quite a distance, noting the colors and admiring it, but I did not notice where it terminated in the greenhouse; but I was told about it several days after I had passed by. Now, imagine acres and acres of terraces like the one I have described, and you will have a pretty good idea of Mammoth Springs. It takes pretty nearly half a day to look them all over.

Oh, yes! there is one thing more that makes the visitor utter exclamations of delight. You can look down into the bottom of some of these larger springs, and see, through the transparent water, the most gorgeous structures. Away down you look, as if into the bottom of a deep well. As water is very deceptive when you look down at an angle, I judged that in some places you could see straight down into the water fully fifty feet. Great stalactites and stalagmites form marble pillars like those in Mammoth Cave; and many times you can look off in caverns showing that the ground above these boiling lakes is so thin it seems as if it would break through. In fact, there are places that have been labeled by the government, "*Dangerous.*" No stock or horses are allowed to go near these springs, because they might break through this thin crust. My impression is they are great subterranean lakes of boiling water. The roof is supported by arches and pillars. Now, this is not my imagination, because at the Devil's Kitchen, where the water is not now flowing, you can go down through an opening only a few feet across, by means of a very long ladder. I went down and down until it was so hot, and smelled so strongly of sulphur, that I began to think of getting back. But as I saw foot-tracks up on either side along the bottom, I concluded it would be safe to go where other people had. But I made my investigations rather hurriedly, and was very glad indeed to get a breath of fresh air when I got out. Down in this cave are wonderful forms of carving, the result of the hot-water currents, I presume. Angel Terrace is so named on account of the great delicacy, not only of the carving (if that is the right word), but on account of the rich coloring.

These hot springs sometimes cease to act, as in the case of the Devil's Kitchen, and then, again, they break forth with a sort of eruption in unexpected places. Narrow Gauge Terrace is a place where the flat rock seems to have been lifted up so as to form a ridge like the roof of a house. The hot water comes out all along the ridgepole, and this ridgepole is about 300 feet long. The water runs down the roof of the house, as it were, and is colored with a most brilliant coloring.

Near Narrow Gauge Terrace is what is called the White Elephant Terrace. A hot spring is in the middle of the back of said elephant. It runs over and down the sides, and then actually runs down and out of sight between what might be called the elephant's legs. One is tempted to call the spring stupid, because it goes away up to the top of the elephant's back before it gets out. Now, this white elephant illustrates vividly the way in which the hot springs operate. Very likely the water comes up through one or more openings in the elephant's legs. It built up the legs first, then ran over and solidified until the legs were united, and the streams of water also united, and in the same way produced the body, back, and head of the elephant. Now, the queer thing about it is that, after having formed the elephant, the water runs down, as I have said, along the legs, and disappears in a cavity that goes away down in the ground. Why does not the spring get out down in the ground without the circumlocution of going up on the top of the elephant's back, running over, and then getting away? It is because of this wonderful deposition of minerals. In some places it made me think of the tallow candles of my childhood. Some of the older friends, at least, will remember how a neglected candle would sometimes pile up strange figures, caused by the melting tallow running over the sides slowly, then getting cold.



GOLDEN GATE.

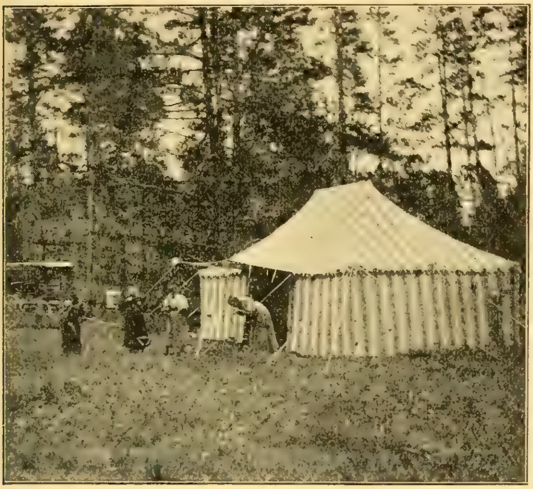
You can go all around and look at things, but you are not allowed to break off fragments to carry away, nor can you throw sticks and stones into the springs. Just try it, and see how quickly you will get the police on your track. I was overhauled by a policeman only once. He told me to be very careful about frightening horses, especially where the roadway was cut into the sides of the mountain. He suggested I had better dismount and go on foot around such dangerous places.

Away up in the mountain there is a spring so large that it is called Bath Lake; but the water comes into it so slowly that it is just about the right temperature for a bath, and a notice is put up permitting boys to go in swimming after seven at night, but at no other time.

Near Mammoth Hot Springs is Fort Yellowstone, where the superintendent of police resides. The road on from Mammoth Hot Springs is not very difficult for the wheel; and no wonder; for one piece of it, scarcely a mile in length, cost the government $14,000. But there are wonderful sights all along this mile. We give you a glimpse of it.

Much of the roadway here is made of plank, with one side let into the cliff, as you will see in the cut. A good iron railing prevents people from falling over. Some of the cliffs here go straight up so far skyward that one is tempted to stop every rod and gaze in open-mouth wonder. Just at the point you see in the picture, I found some government employees working on the road; and as I had climbed nearly a thousand feet that forenoon I very much enjoyed a dipperful of water in a pail they carried along with them. A little further on, feeling weary, as it was time for my forenoon nap, I wheeled out into a clump of beautiful evergreens, and lay down on the soft green grass, my head resting on the handle-bars of my wheel where my coat was tied, and had a very refreshing nap. At dinner-time I reached Willow Park, getting my first glimpse of one of Wylie's camps with its permanent tents, and with *me* it was a case of "love at first sight." I give you a picture of one of the tents, but it does not half do justice to any one of the camps.

Just imagine a group of tents so arranged as to form a little village, with the ground tramped down hard and smooth, and the whole village swept up neat and clean. Then imagine, inside of each tent, a nice clean dainty bed, with carpeted floors, clean towels, washbowl and pitcher, and every thing to match. If it is dinner-time you would have to imagine also a larger tent with the long table well filled. Do not forget an abundance of easy camp-chairs, with magazines, books, and papers, and last, but not least by any means, the whole little village peopled with bright intelligent folks, old and young. The path was down hill leading to the camp, so I came in on my wheel at a pretty good speed; but as I sprang off I uttered an exclamation of surprise and delight. A nice-looking gentleman responded courteously, and I talked with him quite a little while before I discovered I had tackled Mr. Wylie, the boss (not only of this camp, but of ever so many others like it), the very first thing. In a little time I had another nap in one of those beautiful tents, and had a nice dinner of trout just caught out of the lake near by. Then I went out into the open woods you see in the picture, and picked wild strawberries. They were just getting ripe about the first of August; and at the end of a path through the beautiful spruce and pine trees in a shaded little nook I found the Apollinaris Spring. The water is said to be almost identical with that found in the celebrated spring in Germany; and I am told it is the only one besides the German spring on the face of the earth. Somebody said a syndicate had offered Uncle Sam more than a million of dollars just for this spring alone; but Uncle Sam replied, "No, no, boys; you can not have that spring, nor any thing else in Yellowstone Park, to speculate on and make money out of. This whole domain is to be kept just as God made it, as nearly as we can. You can drink all the water you choose, or carry it away in bottles for your own use; but no speculating. You Yankees may trade and barter all you please anywhere else in the whole United States; but this little 'garden-patch' is for the *people*. Every child of our country may come here, help himself, and enjoy these things, without money and without price; but they are not to be sold or *peddled* out."



ONE OF THE WYLIE TENTS.

I suppose, friends, some of you remember that I almost always have some sad experience with drinking-water when out on my trips. Well, some kind friend informed me that everybody could drink just as much as he could "hold" of the water from this spring, at all times and under all occasions, and it would not and really could not hurt him a bit. If he were dyspeptic, or had other troubles, it would just do him good—that is all. And so I drank. Now, that water is exceedingly delicious. It has a sort of tart twang to it that just hits the spot exactly. Like the melon-tree of Bermuda it seemed to "fill a long-felt want." There was not any kind of cup to drink out of. My good friend Wylie says he can not keep a cup there, anyhow he can fix it. All sorts of tourists are visiting the springs continually, every day, and even after dark, and they will carry off every thing in the shape of a drinking-cup. I was going to propose making him a low offer of a gross of our cheap tin cups; but I was discouraged when I thought of the expense it would involve to get them there. So I bent up a sort of drinking-cup from the bottom of a tin can. After I had got it fixed I kept testing it to see how it would work; and as I could not tell just how much it held, I did not know how much water I drank. The next day I concluded "*too much* of a good thing is worse than none;" but I will tell you more about that later on.

Did I tell you that it freezes a little almost every night in Yellowstone Park? Well, it does; and after the sun went down I got on my overcoat and put a big silk handkerchief in my bicycle cap, but I was chilly even then, and began to wonder if I should not have to go to bed just because I could not keep warm as other people do. When I first got into camp I noticed there were some benches set in the center of the village, in the form of a square; but I did *not* notice some blackened sticks in the center of this little square. Just as I was beginning to feel a little "blue" with cold, one of the men started a fire; and when I planted myself in one of those exceedingly easy camp-chairs, in just a few minutes I was "so comfortable;" and some of the ladies came out of the different tents and sat down; others dropped in, including the people who did the work, and by and by we had quite a family circle. Well, right in the midst of our merriment a strange and unnatural voice issued from the doorway of one of the tents. It was a phonograph. One of the tourists had brought it along, and he manipulated it so as to give us a first-class city entertainment. When the crowd encored, of course he had to repeat; and, didn't we have fun that evening? I enjoyed myself so much that I then and there declared I would have a tent like one of the Wylie tents, in our dooryard, and then I would have a campfire around which we could sit on frosty nights, and enjoy the frosty air while the campfire would keep us warm.

THE OHIO STATE FAIR, AT COLUMBUS.

On the morning of Sept. 2d, just about as the sun was rising, it came into my head that I ought to visit, at least briefly, our State Fair. There were several obstacles in the way. First, John was in Canada, and Ernest was somewhere in York State, and they had left me in charge of the ranch. Second, it was the last day of the fair. It must be now or never. Third, there were no trains running so I could get there and back that night. But there was a train on the Big Four that would reach Wellington, 20 miles west of here, at 8:55, and it was after 6 o'clock already, and I had not had my breakfast. I got the latter, however, in double-quick time, grabbed the Columbia chainless that doesn't need any oiling nor any thing else; and I made my 20 miles in an hour and three-quarters.

In one respect, at least, and a very important one, our State Fair was a success. No drinks were for sale on the grounds, and, thanks to the Anti-saloon League, none around the outside of the fence—at least I did not discover any, and I was rejoiced to find no gambling-devices or low-lived side shows, nor any thing objectionable in that line. There was a very large attendance of wide-awake farmers and everybody else interested in any branch of agriculture. The various churches and the W. C. T. U. furnished excellent lunches and refreshments; and last, but not least, the honey display, both comb and extracted, was about as nice as I ever saw at any State fair. Whom do you suppose I found in front of one of the neatest-looking honey-stands? Why, it was our old friend Mrs. Jennie Culp (now Mrs. Williamson). She has been out west for several years; but she found her bees had not been sold in her absence, and so she is back in Ohio keeping bees again, and selling honey.

Mr. and Mrs. Goodrich, a very nice-looking couple, were presiding at an adjoining stand; and Dr. Besse, and some others whose names I do not recall, were near by. I was a little surprised to see at least half a dozen excellent exhibits after such a poor season. But the Ohio bee-keepers, at least, do not propose to be snowed under, even if we have had one season that is almost an entire failure.

OUR HOMES,

BY A. I. ROOT.

In our last issue I told you we were having a conflict here in our town in regard to the matter of saloons or no saloons. I mentioned, too, a certain petition that had been circulated. This petition was put to the council, asking them to call for a new vote in regard to the matter of opening saloons here. When I learned that a good many of our helpers had signed this petition I made an appeal to them, which I have thought best to submit to the readers of Gleanings.

A LITTLE TALK FROM A. I. ROOT TO OUR EMPLOYEES IN REGARD TO THE TEMPERANCE ISSUE NOW PENDING.

I hardly need say any thing to the older ones in our establishment in regard to the stand that I have always taken here in Medina in regard to temperance matters. I have thought, however, it might be well for me to state my views a little more clearly in regard to having open saloons here. First, let me say I want all of our boys, old and young, to be *men* in the best sense of the term, and by all means to have opinions of their own. During our last presidential election it was reported I was going to turn off every man in my employ unless he would vote for McKinley. Later on it was reported by people on the other side of the fence that I was going to turn off all who *would* vote for him. To correct such unreasonable statements I put up a notice over the time-desk, something as follows:

"*Vote for whom you please, but don't talk about it during working hours, please.*"

I hope the people who have known me all my life, especially around home, would know that that would be my stand. But saloon or no saloon here in our town of Medina is a little different matter from the one I mentioned regarding politics. In regard to this question I would still say, vote as you please; or I would a little rather put it, vote according to the dictates of your own conscience. If you can vote for an open saloon in Medina, and ask God to bless you in so doing, by all means vote that way. But let me ask of you not to get *all* your information as to the great money-producing power of the saloon from the saloon-men themselves, for they have an ax to grind, and that ax is yourself.

In the *Medina Gazette* recently there was a thought that I wish most earnestly to commend to all. It was something like this: "Let there be no intemperate discussion in discussing temperance in our town." And now may God help *me* to be temperate in my hostility to the saloon business.

VOTE ACCORDING TO YOUR CONSCIENCE.

Now, boys, if I were going to vote for open saloons I do not believe I would work any longer for The A. I. Root Co.* Now, hold on. Do not say I said you would be turned off. We never turned a man off because he was a Democrat, Republican, or Prohibitionist; and I do not suppose we would think of turning a man off, even if he voted for an open saloon. That is not our way of doing business. When we are discussing as to what hands to keep and whom to let go during the dull season, the first question among our board of managers is, "Does this man do his work well, and is he always on hand?" If the answer comes in the affirmative, he is not likely to get turned off, even if he does sometimes frequent saloons.† By the way, several of the large railway companies have recently put up rules to the effect that they would discharge any of their men who might be seen even going into or out of a saloon. Now, that is going further than your old friend A. I. Root ever thought of going. Years ago he did bear down pretty hard on the tobacco habit. But if it was an error it was in a good cause. I do not know what you think about it; but some of your wives, sisters, and moth-

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*Perhaps a little further explanation should be made here. An open saloon can do more harm in a few hours, especially if those hours are after dark, than all the ministers, all the schools, all the Endeavor societies, and every thing else of a like nature, can cure in weeks or months, or perhaps years. A boy may be started to ruin in one night in the saloon, and his start may be such that all the efforts that can be made through his natural life will be unavailing. Now, when you know a man is spending his life and means in keeping saloons *out* of his native town, if you deliberately propose to work against him, and undo his lifework faster than he can build it up, I submit that ordinary consistency, or a very small degree of manliness, should stand in the way of your even asking him to give you work.

†Permit me to say, however, it is very seldom indeed that we find such a man as the above. He may be so for a time, but he must either give up his habits or else he will very soon come to be very unreliable.

ers still think he had it just about right. Now, a man who attends to his work promptly may do what he pleases—that is, within the bounds of reason—out of working hours; but, other things being equal, we shall give the preference to the man who does not frequent saloons. This is only business common sense. Another thing: In discussing what hands we shall keep and which ones we shall let go, we often give the preference to the boys who are having hard work to get money to gain an education; and such a boy *never* frequents saloons; and I do not think he ever votes for open saloons. I tell you, friends, there is a vast difference between the boy who is working hard to get through college, and the one who proposes to use his earnings for beer and tobacco.

THE MEN IN THE ANTI-SALOON LEAGUE.

Perhaps not all of you are aware that I am one of the directors of the Ohio Anti-saloon League. The motto of this League is, "The Saloon Must Go." I have spent not only a considerable amount of time but comparatively large sums of money in supporting the Ohio Anti-saloon League, and I have rejoiced in the opportunity it gave me of meeting with the very best and most intelligent educated men and women in Ohio. By the way, boys, what kind of people do you suppose I meet in the Anti-saloon League? Well, we have our foremost and best ministers of the gospel, from all denominations. Then we have our college professors, the best and brightest in the State. We have among our number, in fact, the men who compile the school text-books that the children of the United States are now studying. We have men who are giving their lives that our Ohio boys may grow up pure and good, and honest and true.

Now, there is another league in Ohio. This league has more men and more money than we have.* It is the Ohio *Liquor* League. The purpose of its members is to build up the trade in intoxicating liquors; to get open saloons into every city, village, town, and four corners, if they can, in our State. What sort of men do you suppose meet together in this league? Any college professors? any ministers of the gospel? any who love righteousness and hate iniquity? Not one, I fear.

IS IT TRUE THAT MORE LIQUOR IS NOW SOLD IN THE TOWN OF MEDINA THAN WHEN WE HAD OPEN SALOONS?

Some say there has been more liquor sold in Medina during the past twelve years than in the same period when we had open saloons. I have wondered sometimes whether anybody *believed* this, even when he said it. I am not around town very much, but I have frequently heard strangers complain bitterly because they could not get a drink anywhere here for either love or money. The man who was sent here to put up our big press declared he had gone all over town, tried his best to get inside of "the ring," but could not get a drop. He finally sent out into the country and got a jug of home-made wine; and before I knew it he was passing it around among our boys until I stopped it. Perhaps I had better tell you a little more.

Our Anti-saloon League sent a detective to Medina, and he spent two or three days trying in *vain* to get a drink. I heard him say he thought Medina people ought to be pretty well satisfied with the pressure they had brought to bear on the liquor-trade. He mentioned other towns all around us, some of them dry, where he got as many drinks as he could pay for, without any trouble whatever. Now, does any one believe it is true that no good whatever has been done in our town by not only keeping down all signs, but making liquor-venders work with such extreme caution?

WHY THIS CLAMOR FOR OPEN SALOONS?

Right here comes in another point, and please do not try to dodge it, dear friends: Not a word (at least to my knowledge) was said about an open saloon until our Ohio League, with the hearty co-operation of the town officials, had got two of our liquor-men into a corner. Now, why should all of this sudden clamor for an open saloon start up at just the very time we had succeeded, after months of hard work and lots of expense, in getting these fellows into this fix? The principal excuse I have heard offered, by those who vote for an open saloon, is that it would be better, "in the present state of affairs." Why, what do you mean, friends? The present state of affairs is *tiptop*. Any one who is really "temperance" at heart should swing his hat, for it looks as though we were going to have the banner town of the State, so far as suppressing intemperance is concerned.

SALOON-TAX MONEY AND PAVED STREETS.

Another argument (and a good many consider it the strongest one) is that a saloon would pay quite a little money to the town, that we could have for improvements. Somebody said in my hearing, the liquor business of Medina would give the town $1000 every year, for paving streets, electric lights, etc. If we had *enough* saloons here, and they all paid the tax, perhaps it would. Here are the actual facts: An open saloon would be compelled to pay every year $350 Dow tax, and not one cent more. One-half of this amount would go to the municipality, and the balance to the State and county. I doubt very much whether more than one saloon could pay this tax. We should, therefore, as a village, get as the price for an open saloon not more than $175* a year. This would be more than offset by added crime, poverty, and bad debts to the business man, because the money has been paid to the saloon. At Bellefontaine, Ohio, crime increased 60 per cent within six months after the saloons returned, according to the mayor's statement, and that is about the way it runs in other towns.

"SPEAK-EASIES" IN MEDINA, AND THE SALOONS IN WADSWORTH.

Here is another thing to consider: If Medina starts open saloons it will be a general signal for the rest of the county to follow suit, for the county-seat ought to lead. Shall we not rather make Medina *County* dry as a whole? Most of you know what the effect of open saloons has been in our neighboring town of Wadsworth. A short time ago one of Wadsworth's old and respected citizens was held up and robbed by two men almost in broad daylight, and almost in the heart of the town. He yelled lustily for help; but, although people were all around within hearing distance, nobody paid any attention to him. Did you notice the excuse the papers gave for his not being heard and receiving help? Why, they said there were so many drunken brawls going on almost constantly at every hour of the day that nobody paid any attention to his "yelling." They took it as a matter of course. And this is not a solitary instance by any means of similar troubles in and around Wadsworth. Have we had any such goings-on as this here in Medina during the last twelve years?

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* But *God* and *right* are on our side, and so we do not fear.

* I would rather pay this amount myself than to have an open saloon.

THE TREATING HABIT.

But this is not all. One of the greatest evils attendant upon the open saloon is the treating habit. A young man steps up to the bar, and invites all to drink to his health. After all the rest in the room have "returned the compliment" they have had anywhere from three to ten drinks apiece. It is this treating that makes *drunkards*. If people *will* have liquor, let them have it in their *homes*. It is not the beer-keg in the family cellar, but the *open saloon* that is a curse to any town.

A LEGALIZED SALOON.

My story is getting rather long, dear friends; but there is one thing more I must speak of. An open saloon is legalized by law. The saloon-keeper is thus made *respectable*. He can stand out in front of his shop, and hold up his head; and you, boys, *make* him respectable by your votes. During the past twelve years the liquor-vender has been rather looked down upon. He is a criminal here in the eye of the law. May be he got along without punishment; but, nevertheless, he has been rather kept under—at least, if he ever had to own up how he got his money.

HOW THE SALOON IS RUN IN CITIES.

I have suspected that a good many boys in Medina know very little about how the open saloon is run in cities. Let me give you a little inside view. The following is an extract from the August number of the *American Issue:*

> Rev. Gilbert J. Raynor, district superintendent of the Toledo district of the Ohio Anti-saloon League, some four weeks since, at the request of some citizens of Columbus, came to this city in the capacity of a detective. He caused to be inserted in a morning and evening paper an advertisement asking any one having a saloon for sale to address him (giving certain initials) at the newspaper offices. There was at once a liberal response on the part of those having "wet" goods for sale. Mr. Raynor, armed with these letters, and being a possible purchaser, had easy access to the saloon-keeper's books, and no trouble to tap the fountains of information as to the secret methods of conducting the saloon, gambling, and brothel business in the city of Columbus. He found that absolutely no legal restraint at all was being insisted upon by the city government. Gambling of all kinds was carried on unmolested, by the knowledge and consent of the police. In fact, he was given to understand that these law-breakers regarded the police as their best friends, and in return for their kindness they give the police their drinks and cigars free. In one instance he followed a policeman into a saloon, who ordered a drink, and, when the bartender set him out the whisky and the usual small glass to drink out of, the policeman, in contempt for the little glass, said: "Give me something to drink out of." Then turning to Mr. Raynor, said, "You might as well have what you want when you don't have to pay for it." Whereupon the bartender gave him a large ale-glass which he emptied, then called for a half-pint, put it into his pocket, and walked out without even offering to pay for it. In every instance he found the Sunday sales in the saloons to be much larger than the week-day sales, usually more than double, and in some cases trebled. When asked how they secured immunity from prosecution for these violations of law they said they paid their money to the liquor-league, and things were "fixed up at headquarters." When asked what they did if a patrolman interfered with them, they simply said they reported him to "headquarters." The unanimity with which they all assured him that things were "fixed up at headquarters" was very striking. Having gained what information he could on these and other points, he sent for his "partner" to come, who, when he arrived, accompanied him on his rounds and received the same information direct from the saloon-keepers.
>
> We then called together the pastors of the city in a meeting at the Y. M. C. A. to hear a report from Mr. Raynor. Mayor Black, the police, and county prosecutors were invited to be present, but neither of them availed himself of the privilege. The police prosecutor did send a letter stating that his official duties made it impossible for him to be present. The county prosecutor was out of the city, and Mayor Black ignored the invitation. Mr. Raynor gave a detailed account of his findings at this meeting, a part of which was published in the papers of the city. This so incensed the officials that Chief Kelly swore out a warrant for Mr. Raynor's arrest for criminal libel. He was arrested at the Anti-saloon headquarters in the Wesley Block, put aboard the patrol wagon, and rushed to the police station, the driver sounding his gong to attract attention. Once at the station house he was searched and thrust into a damp back cell as if he had just murdered somebody, and was a most desperate and hardened criminal. In due time bail in abundance appeared, and he was released on a $400 bond. One feature of the searching part of the program at the police court is especially worthy of notice. With scrupulous care they relieved him of all his papers, but left him in possession of his pocket-knife, the only thing about him of the semblance of a weapon that might be used to commit murder or suicide, and the very first thing that would have been taken from any one else—the object being to find some papers upon his person that might incriminate him. They extracted from among his papers brief notes he had used when delivering his address to the pastors at the Y. M. C. A., also some of the letters he had received from the saloon-keepers. This they doubtless had a right to do; but after he was released, the papers—minus those mentioned above—were returned with the assurance that these were all that had been taken, and he was asked to sign his name to a statement in a book kept for that purpose, that he had received every thing, under penalty of receiving none if he refused. His watch and money were finally returned to him, but his papers are still in possession of the police.

ACETYLENE GAS FOR ILLUMINATING.

This to Uncle Amos. Although I never met him I am well acquainted with him. We have a Star generator in our house; have used it since last fall. It stands all winter within a few feet of the stove, and I think an accident could hardly happen. We could not be better pleased with the light. It is but little trouble, and always ready to light, and is beautiful when burning. We have two makes of hand-lamps. They are nice, but more trouble and expense to run than the generator.

Newman, Ill. M. A. SMITH.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

GARDENING FOR THE MIDDLE OF SEPTEMBER.

There is always a peculiar charm, to me at least, in seeing things grow when the weather begins to get cool Many plants make a more luxuriant growth through September and October than in any other month in the year; and I would especially advise that all growing crops be kept clean. In fact, we are just now cultivating our late potatoes where a horse can get through them, and getting out the weeds and mellowing the ground with a hoe where a horse can *not* get through.

If you are going to grow cold-frame cabbage-plants, now is the time to sow the seed in the open ground, for plants to be put under glass when they are big enough to transplant; the same with the Grand Rapids lettuce; and if you are going to grow lettuce in the greenhouse, I would by all means advise you to sow the seed in very rich ground outside, and grow your young plants where you can have plenty of room in the open air. Do not put them under glass until the weather obliges you to give them protection.

Almost all kinds of onion-sets will succeed more or less if put out now in good rich soil. American Pearl and Winter onion, mentioned elsewhere, are planted at this season more than most other kinds.

Keep your parsnips and carrots clean, and make them grow during the cool weather.

Spinach to be wintered over should go in at once. We have just had one single order for 60 lbs. of seed. It is quite a trade to learn to manage spinach so as to have it winter safely in the open air; and different localities require different management. Either practice on a small scale until you get the hang of it, or visit some market-gardener, and see how he manages to make it a success.

Cultivate and hoe your turnips, if you want them to do their best; and by all means cultivate and hoe your strawberry-patch, and see them just "climb" during cool weather when the fall rains come on. After you learn how, you can put out strawberry-plants right along till the ground freezes, and succeed almost every time. Try a few till you get the knack of it, and then you can smile when you hear people talk about "strawberries put out in the fall are no good."

Now keep your things looking nice, even if everybody else does let his garden grow up to weeds. Make your own a refreshing contrast to the surrounding neighborhood. Why, I believe I enjoy making a garden in the fall more than in any other season of the year.

BENSON'S RENOVATOR COW PEA, ONCE MORE.

About the first of September I noticed a single plant among these cow peas, covered with pods. In fact, I counted about three dozen on a single plant, and half a dozen of the pods were mature and dry. This is remarkable, for they were planted only about the middle of June, and we have always supposed the regular cow pea would not mature as far north as this. The plant that had these early pods on, of course did not have the mass of foliage of the rest of the crop which is just coming into bloom. I mailed some of the ripe peas to Mr. Benson, the originator, and here is his reply:

Friend Root:—The sample of pea shows the true type of the Renovator, though it might be well to save them separate, as I find frequent sports, generally cream or black in color. It makes me feel good to get your report; for if your peas are blooming they will mature. The crop comes on almost at once, and matures surprisingly fast. My peas are just blooming. One peculiar feature I forgot to mention in my circular is that the early-planted peas and those planted late begin to bloom at the same time. The peas I planted May 1st are no further on than those planted July 1st, except an occasional plant, as the one noticed with you They will mature in three months only when planted late. The early peas continue to grow. They seem to know the proper time to bloom. I have some which came up August 1, which show bloom-buds. I have a piece of thin land, planted early, six feet apart, one plant in a hill. The whole plot is now a mass of vines three feet deep, not only adding nitrogen to the soil, but dense shade, drawing fertility from below. I also have a piece which is a fine stand, from volunteer plants, seed of which lay in ground all winter. No other pea will do this. Pick your peas off, and leave the vines on the ground till spring, then turn under and note improvement. To obtain the greatest amount of nitrogen, I suppose they ought to be turned under when in bloom. I started on one of the worst old red-hill farms in Illinois which no one else would buy, and the Renovator pea has been a Godsend to me. It is all and more than I claim it to be, as grown here, and I am confident it will be worth millions to the farmers of the United States and Canada. No matter if it never matures a pea; if not, even then it will be invaluable for hay, and to restore old soils.

I am getting to prefer cow-pea hay to any other feed for horses and cattle. M. BENSON.

Dongola, Ill., Sept. 3.

Our friends will understand, from reading the above, that it evidently was not intended for print; notwithstanding, I have chosen to use it. Perhaps we should allow something for the enthusiasm of the introducer of a new plant; but of this I am satisfied: That this cow pea will produce a greater mass of feed, or material to plow under, than almost any thing else we have. I have not tried the vines for feed, for I hardly want to spare any just yet. In regard to the seed lying in the ground over winter, and then germinating, the *Practical Farmer* for Sept. 10 has the following in answer to an inquiry:

> Our friend might try the same experiment for many years without having the same result, and the experience of all who grow the cow pea is that success can not be insured if the seed is sown too early in the spring, notwithstanding we always have more or less of volunteers. It is well known all over the South that some varieties of the cow pea, and particularly the black, will at times lie over winter and volunteer in the spring.

THE BLISS TRIUMPH POTATOES; A REPORT FROM THEM.

Friend Root:—I send by mail two potatoes to you of the Bliss Triumphs, which you sent me last April. The potatoes were spread out in a light room (*a la* Green), and kept there till the 2d of May, when they were treated with the corrosive-sublimate solution, and planted, making 66 days at the time they were dug. This is the most remarkable growth I have ever noticed in such a short time.

Early Ohios, Bovees, and Thoroughbreds in the same field did not do so well.

I see Mr. Green states that treating the potato as above is a preventive for the scab; but you will notice one of the tubers is slightly affected. They were planted on a fall-plowed sod that had not been in potatoes for more than fifteen years.

Of all the varieties, the Bliss is the only one that is showing any sign of blight; but my neighbor's Early Ohios, just over the fence, and planted a month earlier, were damaged considerably with it.

The smaller tubers were the 66-day potatoes, and the larger were 90-day ones. I tried spraying with the Bordeaux mixture, but I am inclined to think I mistook the ripening of the vine for the blight.

Lebanon, O., Aug. 22. DR. JNO. Q. MULFORD.

The samples sent are certainly very fine. The great trouble with the Triumph potato, both in Bermuda and in our own country, is its tendency to blight. But I am under the impression that either a good deal that is called blight is not really so, or that the genuine blight may be prevented by very rich soil and the right way of applying it. Our extra-early Triumphs were the first to die down; but I could not make out exactly whether it was the blight or the dry weather. Our largest piece was planted about the first of July. When I got back from Yellowstone Park I was completely astonished to find patches here and there growing thriftily, without any symptoms of blight whatever. I said first, "We must have got some other potatoes mixed in;" but when I noticed quite an area about the middle of the patch, all bright and thrifty, I was a good deal puzzled. Then I began to investigate the treatment the ground had had the year before; and all at once I caught on to the mystery. On that piece of ground we planted strawberries a year ago last spring. In the fall we were called upon to take care of some hog-pen manure that had to be moved at once; but the ground was rather wet for a team to get on it. I told the men to spread the manure on the dryest portions of the strawberry-patch. So a load was scattered here and there. This spring this manure proved to be so full of timothy seed that it was entirely out of the question to clean it out from among the berries. By the close of picking-time the timothy was knee-high, and just as thick as it could stand—that is, where this rich manure had been scattered. Now, we had such a demand for strawberry-plants last spring that the patch was practically stripped; therefore I decided to plow it all under, and plant potatoes. Now, then, right before my eyes is a remedy for blight—that is, if it really *was* blight that made the greater part of the field die down and ripen prematurely. A good many writers have recommended, where you wish to manure the ground for growing potatoes, to put the manure on the grass or clover the year before you grow the potatoes. Today, Sept. 5, those Triumphs where we had the manure and timothy are as bright and green as any potatoes we have. Wherever there was no manure or timothy, the vines had died down with a small crop of small potatoes.

ARKANSAS APIARY FOR SALE.
Sixty eight colonies of Italian and hybrid bees in 10-frame hives, with fixtures and honey-crop, at a bargain.
Henry Zeiner, Bertig, Greene Co., Ark.
In writing, mention GLEANINGS.

ONCE IN A LIFE TIME
is often enough to do some things. It is often enough to buy a wagon if you buy the right kind. The
ELECTRIC HANDY WAGON
lasts that long under ordinary conditions. First the life of a wagon depends upon the wheels. This one is equipped with our **Electric Steel Wheels,** with straight or stagger spokes and wide tires. Wheels any height from 24 to 60 inches. It lasts because tires can't get loose, no re-setting, hubs can't crack or spokes become loose, felloes can't rot, swell or dry out. Angle steel hounds.
THOUSANDS NOW IN DAILY USE.
Don't buy a wagon until you get our free book, "**Farm Savings.**"
ELECTRIC WHEEL CO., Box 95, Quincy, Ills.
In writing, mention GLEANINGS.

A Business Hen
MUST HAVE A WORKING CAPITAL.
She can double her production of eggs if assisted a little. **Green Cut Bone** and **Mann's Granite Crystal Grit** makes the best working capital.
Mann's New Bone Cutters
prepare the bone in the best and most economical way. Ask anybody for testimony. **Cash or on installments.** Also manufacture **Clover Cutters and Feed Trays.** Catalogue Free.
F. W. MANN CO. Box 37, Milford, Mass.
In writing, mention GLEANINGS.

Low-down Broad-tire Farm Trucks
originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons, and milk-peddlers' wagons. Steel-wheel trucks, $18.
Farmers Handy Wagon Co., Saginaw, Mich.
In writing, mention Gleanings.

One Man with the
UNION COMBINATION SAW
Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei
Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.
In writing advertisers, mention GLEANINGS.

IF YOU WANT BEES
that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS,** the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for $2.00; per dozen, $7.00; select warranted, $1.00; tested, $1.00; select tested, $1.50; strong 3-frame nucleus, with select tested breeder, $3.00; same with select warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.
J. P. MOORE, Morgan, Pendleton Co., Ky.
In writing advertisers, mention GLEANINGS.

1,000,000 Peach Trees

grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

THE STORRS & HARRISON CO.,
Box 1, Painesville, Ohio.

In writing, mention Gleanings.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.

Queens At Especially Low Prices.

By return mail, safe arrival guaranteed. Stock the best. Thirty-five years' experience in breeding the Italian bees warrants me in saying this.

1 Select Tested, for Breeder,	$2.00
1 Tested,	1.50
3 Tested,	3.75
1 Warranted Purely Mated	75
3 " " "	2.00
5 " " "	3.00

Send for 40-page descriptive catalog of Bees, Hives, and a full line of general supplies at prices to suit the times.

All orders accompanied with cash will receive prompt attention. Address

W. W. CARY, Lyonsville P.O.,
Formerly Colrain, Mass.

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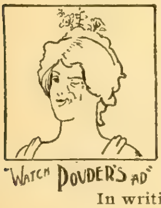

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BEE SUPPLIES.

Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass. Ave., Indianapolis, Ind.

In writing, mention Gleanings.

GET READY FOR '99.

Golden Italian Queens; virgin, 30c; 4 for $1.00.

Gardiner L. Ellis, = = Millsboro, Del.

FOR SALE OR TRADE CHEAP.

1 Automatic cutter-head, to cut entrance in sections.
1 V-grooving machine, " V-groove "
1 Dovetailing-machine, " Dovetail "
1 Saw-table. All Root's make machines.

J. W. Bittenbender, Knoxville, Ia.

In writing advertisers, mention GLEANINGS.

Pekin Ducks, $1.00 Each.

We have the largest and finest flock of Pekins we have ever raised, and in order to reduce the number quickly we will for a short time sell in lots of five or more at $1.00 each. They are the genuine long-bodied Pekins, and will surely please. Order quick.

We are headquarters for

"Every Thing for the Poultry-yard."

Largest and cheapest stock of Poultry Supplies in the United States; patentee and manufacturer of New American Incubator and Brooder. Pure-bred poultry at living prices. Send for our catalogue. It's a pretty book of 80 pages, finely illustrated, full of information. You need it. It's free. Address

Geo. J. Nissly, Saline, Mich.

In writing advertisers, mention GLEANINGS.

FOR SALE.

7000 Lbs. Fine White Extracted Honey.

Also **Southern Bloodhounds.**

ELIAS FOX, Hillsboro, Wis.

ITALIAN QUEENS for sale. The rest of the season, 50 cts., or three for $1.00. Colony, $4.00.

MRS. A. A. SIMPSON, Swarts, Pa.

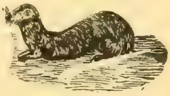
In writing, mention GLEANINGS.

The A. I. Root Co.'s Goods At Their Prices.

Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.

M. H. HUNT,
Cash for beeswax. **Bell Branch, Mich.**

In writing, mention Gleanings.



Ferrets!

800 White and Brown ferrets now ready to ship. Send for free price list of ferrets and bees to

N. A. Knapp,
Rochester, Lorain Co., Ohio.

In writing, mention GLEANINGS.

Don't Monkey with Cross Bees.

Buy good stock. The best is the cheapest. Nuclei, full colonies, and queens a specialty. Have been breeding queens for the trade 14 years. Untested, 75c; 3 or more, 65c each. Send for 40-page catalog, information to beginners, etc., free.

A. I. ROOT CO.'S GOODS KEPT IN STOCK.

JNO. NEBEL & SON, HIGH HILL, MO.

In writing, mention Gleanings.

Honey-jars.

1-lb. square, $4.60 gross.

Cartons, Labels.

Low price on quantities.

Apiarian Supplies.

Bees and Queens.
Pure Honey.

I. J. Stringham,
105 Park Place, New York.

In writing, mention Gleanings.

SPECIAL NOTICES BY BUSINESS MANAGER

HONEY MARKET.

We are entirely sold out of water-white California sage honey, and as there is no crop in Southern California this year there is no prospect of our getting any more till next season. We still have a supply of light amber California honey in 60-lb. cans, 2 in a case, which we offer at 7 cts. per lb.; five-case lots at 6½ cents. We have also a choice lot of Wisconsin honey, clover and basswood, mixed, which we offer at 7½ cts. per lb. by the case of 2 cans, i. e., $9.00 for 120 lbs. We hope a little later to have a carload of alfalfa honey, both comb and extracted.

INSTALLING NEW ENGINE.

We expect, during the month of October, to be putting our new 20x20 Ideal engine in the place of the Buckeye which has served us so well these years, and of necessity will be shut down for about three weeks in the wood-working department. If any one is needing any odd-sized goods which he expected to order during that month we would advise placing the order at once so that we may get out the work before we shut down. The Buckeye engine to be replaced is 13x21, running at present 200 revolutions per minute, and furnishing about 135 horse power at 95 lbs. steam pressure. At normal speed, 165, and ordinary pressure, 80 to 90 lbs., it will furnish easily 100 horse power. It is a Tangeye bed, left-hand automatic engine, with two drive-pulleys 6x12 inches, and is practically as good as the day it was installed. It can be bought for $500 cash, and is a big bargain at the price to any one wanting an engine of that size and style.

Special Notices by A. I. Root.

We still have an abundance of nice strawberry-plants at prices quoted in our last issue, page 669.

ONION SETS SOLD OUT.

We are already closed out on both Egyptian or winter onion-sets and American Pearl. We have, however, an abundance of nice onion-plants of both varieties. The former, planted out almost any time in the fall, will grow with scarcely a possibility of failure. In fact, they grow all winter long. The American Pearl, however, ought to be put out some time in September. We have tried them side by side with sets of the same variety, and one seems to succeed just about as well as the other. If they stand the winter, they make large white onions, ready to pull about the time you are picking your strawberries. A good many, however, do not succeed in wintering the American Pearl. Market-gardeners with rich soil, well underdrained, generally succeed all right. We can furnish plants of either of the above at $1.00 per 1000; 5000 or more, 75 cts. per 1000. The winter onion-plants are very much larger than the others, and therefore the express charges will be more.

CHARLES F. MUTH & SON.

The following is a clipping which we take from the Cincinnati *Times*, for Sept. 2:

A sensational suit was filed Friday by Matilda Schaufler against Charles F. Muth & Son, August Muth, and the administratrix of the late Charles F. Muth, of the Board of Control, whose peculiar death in Indiana is recalled. Plaintiff sues on notes for money loaned as follows: For $1500, May 4, 1897; $1970, September 1, 1897, and $2000, December 22, 1897. The money was loaned by Jacob Pistor, whose widow she is. The first note was all paid except $226, so that the amount sued for is $4196.62, with interest. It is alleged that the firm of Muth & Son is insolvent, that the assets are only about $5000 and the liabilities $20,000, and that the assets are constantly depreciating in value. A receiver is therefore asked toward disposing of the stock and applying the proceeds to the payment of this and other debts of the firm.

KIND WORDS FROM OUR CUSTOMERS.

The six queens arrived this morning, all in fine condition; not a single dead worker in the whole lot. I enjoy doing business with the A. I. R. Co. The only objection is, you are so far away. C. K. Decker.
Angiola, Cal., Aug. 31.

PLAIN SECTIONS A DECIDED SUCCESS.

In regard to the use of plain sections, they have been a decided success so far. We have taken only about 150 sections, but not one that was not fastened to the bottom of the section. R. D. Minehart.
Central City, Iowa, Aug 22.

ANOTHER REPORT FROM THE DARLING STRAWBERRY.

Mr. Root:—I received one Darling strawberry-plant, started in jadoo fiber the last of Aug., 1897. The season was very dry; but by using plenty of water I got fourteen new plants. Seven or eight were rooted enough to bear this spring. I got nearly one pint of medium-sized berries. Jas. Campbell.
Oxford, Ind., Aug. 8.

Your shipment of goods is received, and every thing is just as ordered. I had no difficulty whatever in putting the hives together. Every piece fitted perfectly, and I am more than pleased with their appearance. You may look for another order soon.
Coldwater, Mich., July 20. P. D. Gray.

Please send Gleanings right along. If I ever want it stopped I will let you know. I take several papers, but could not very well get along without Gleanings. Give us the footnotes and Straws, and don't leave out A. I. Root's part either; in fact, send Gleanings just as it is. It is good enough. Geo. Vandewarker.
Brown City, Mich., Aug. 4.

Mr. Root:—I take Gleanings for the sermons, or Home talks. I read them all carefully and prayerfully. The amount of good derived from them is invaluable. They are all carefully saved, and passed round to different persons who are always anxiously awaiting their turn. I read every one to a blind man, who enjoys them more than all the rest of us.
Knoxville, Tenn., Sept. 6. H. H. Cawood.

SOME EXCEEDINGLY KIND (PERHAPS EXTRAVAGANT) WORDS.

I value Gleanings very highly, and mostly on account of A. I. Root's writings therein, as bee-keeping is a failure here. I always begin the book at the back side; and while what you say on theology does not impress me, yet the humanitarian spirit that bubbles up in almost every sentence you write, like water in a spring, and your evident sincerity, have won my admiration. M. L. Bradley.
Vinton, Cal., July 28.

Wants and Exchange.

WANTED.—To exchange for extracted honey, one trio of Buff Cochins, one trio of Light Brahmas (birds are pure bred), 1 Beagle hound (good hunter), shipping-cases, bee hives, and sections.
J. M. Kinzie, Rochester, Oakland Co., Mich.

WANTED.—To exchange tandem and single bicycles for engine, honey, etc.
Robert B. Gedye, La Salle, Ill.

WANTED.—To exchange a 10 inch foundation-mill in perfect condition, for a horse in same condition; or for a market-wagon.
E. W. Brown, Eden, Erie Co., N. Y.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
Byron Walker, Evart, Mich.

WANTED.—To exchange 20 colonies of black bees, all in good shape, but in box hives. Must part with them at once. Also some fine game bantam chickens to trade.
W. S. Brillhart, Oakwood, Paulding Co., O.

IF

IF you would like to see a picture and description of the finest honey-plant in the world, get the Bee-keepers' Review for July and September.

IF you would like to know where to find the best honey-location, to see it described with pen and picture, read the September Review.

IF you are interested in knowing the methods of our best queen-breeders, and would enjoy seeing some fine engravings upon the subject of queen-rearing, one of them a double-page picture, get the Review for August.

IF you would like to learn how to so group and arrange your hives that they will occupy but little space, and yet give to each hive a distinctive location, see the article and diagram on this subject in the August Review.

IF you are interested in knowing what is going on among bee-keepers across the ocean, read "Notes from Foreign Bee-journals," in the Bee-keepers' Review.

IF you wish to see pointed out the errors and fallacious ideas that creep into current apicultural literature, get the Review and note the courage and ability with which Mr. R. L. Taylor conducts the Department of Criticism.

IF you wish a bright, clean, clear-cut, sprightly, beautiful, illustrated, go-ahead, up-to-date, really helpful, useful bee-journal, subscribe for the Bee-keepers' Review.

IF you are not now a subscriber, send me $1.00, and I will send you 12 back numbers, the Review from the time your subscription is received to the end of 1898, and then for all of 1899. The sooner you subscribe the more you get.

◆

W. Z. HUTCHINSON, = = = Flint, Mich.

BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity —one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

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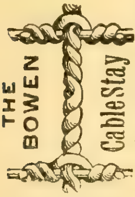

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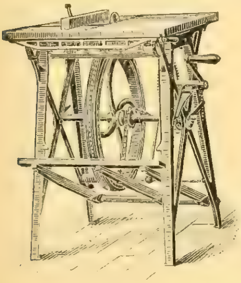

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QUEENS. 500 tested and untested golden queens for sale during October at way-down prices, to unite nuclei for winter. Inclose 60c for a sample queen; or, if you want a number, write for special prices. Breeders producing faultless 5-banded bees, always on hand, $2.50 each. Leather queens, if you desire, at same price.
W. H. LAWS, Lavaca, Ark.

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FOR SALE. Extracted clover honey at 6c, in 60-lb. tin cans. M. ISBELL, Norwich, N. Y.

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In closing out our Department Store, we find we have a larger stock of the articles named below than our successors care to assume; and in order to reduce stock of same, we offer them at the following low prices. Prices hold good only while stock lasts; always best to name second choice.

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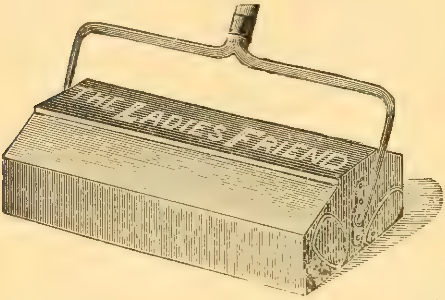

Oak-finish case; wheel on one side: best quality brush. Mrs. Root has used one of these sweepers for ten years, and does not want any other kind. **Special price to close, $1.15 each.**

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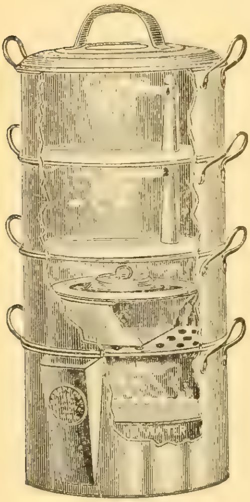
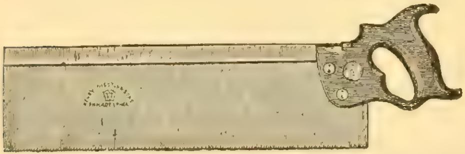


It is a very convenient arrangement for cooking. It is a well-known scientific fact that food cooked by steam is more savory, juicy, and nourishing than by any other process.

Food cooked by this cooker retains its entire flavor and nutritious qualities. It confines the odor of cooking to the kitchen. It occupies little room. You can cook from one to four different articles at the same time in compartments one above the other. It positively does not mingle the flavors. You can cook onions or cabbage in the lower vessel, and pudding in the one directly above, and the odor from one does not reach the other, but is confined to its own particular vessel. The food is cooked as well and as thoroughly in the top compartments as in the lower one. It can be used upon and fits any kind of stove—coal, wood, coal oil, gas, or gasoline. Explicit directions accompany each cooker.

No. 0.	4 vessels, diam. 8 in., 2 qts., 4 lbs.........	$1.00
No. 1.	4 vessels, diam. 9 in. 3 qts., 5 lbs.........	1.40
No. 2.	5 vessels, diam 9 in., 3 qts., 6 lbs.........	1.65
No. 3.	4 vessels, diam. 10 in., 5 qts., 6 lbs. 6 oz.	1 80
No. 4.	5 vessels, diam. 10 in., 5 qts., 7 lbs. 8 oz.	2.00



Back-saw. Has a 14-inch blade; Disston's make, but stamped "McArthur;" extra-fine steel; blued back; neatly polished beech handle; 3 rivets. This is the bargain saw of the list. **Special price to close, 40 cts. each**; postage 25 cts.

Buckeye Sash-lock.

This device holds the sash securely by friction in any desired position, as tight as if it were in a vise. It prevents the sash from rattling, and excludes the dust by making tight joints, and yet it does not mar the wood. It is put on with two screws, and can be put on by an inexperienced hand in three minutes. It works equally well upon upper or lower sash, with or without weights.

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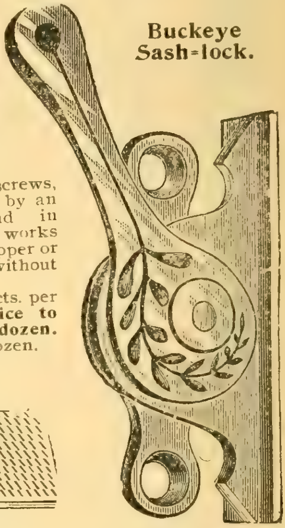
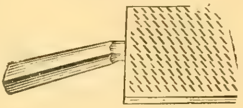
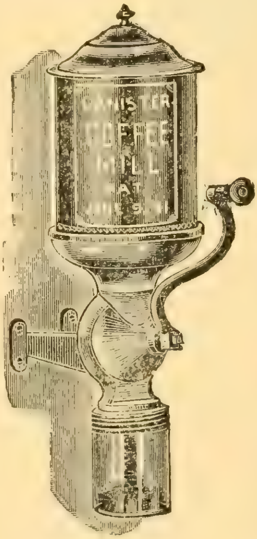


Cattle-card.



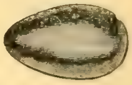
For cattle and horses; solid block; good strong handle. **To close, 6 for 20c; 35c per doz.; post., 5c each.**



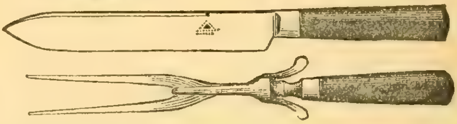
"Pound" Coffee-mill.

Screws to wall; japanned; can holds just one pound; air-tight cover; good grinder; black enameled; adjusting-screw; detachable black enameled cup. Each 50 cts.; dozen, $5.00. **Special price to close, 35 cts. each; $2.00 for box of six, or $3.75 per dozen.**

Nest-eggs.



Wooden or enamel. **Special price to close, 10 cents per dozen; 85 cents per gross; postage 3 cts. each.**



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The A. I. Root Co., Medina, Ohio.

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Honey Column.

CITY MARKETS.

MILWAUKEE.—The condition of this market on honey has not changed much in its essential features since our last report. The receipts of extracted have been very fair, yet we are not heavily stocked, and there is room for more. Comb is not coming very liberally yet, but what has arrived in good order and of good quality meets with good demand for this time of the year. We advise liberal shipments, and are satisfied good results will follow. We now quote fancy 1-lb. sections, 12@12½; A No. 1, 11@12; No. 1, 10@11; dark and amber, 8@10. Extracted, in barrels and kegs, white, 5½@6; dark, 5@5½. Beeswax, 25@27.
Sept. 20. A. V. BISHOP & Co., Milwaukee, Wis.

DENVER.—There seems to be a slight improvement in price of comb honey, in our market. Owing to the failure of crop in some localities, there seems to be an idea that honey will be much higher this winter. We can now quote No. 1 white comb at 11½c put up in cartons, or in glass front, 24-lb. cases. No. 1 white extracted at 6c. Could supply water-white comb or extracted alfalfa clover by the car lots.
R. K. & J. C. FRISBEE,
Sept. 20. Denver, Col.

SCHENECTADY.—With cooler weather there is a better demand for comb honey. We quote fancy white at 13@14; No. 1, 12@13; No. 2, 10@11; buckwheat, 8@9. Not much demand for extracted yet, except in fancy glass packages. Producers desiring to dispose of their crop to advantage should write to us.
CHAS. McCULLOCH,
Sept. 10. Schenectady, N. Y.

BOSTON.—We note an increased demand for both comb and extracted honey, and as a result, with light receipts, prices have advanced. Fancy white comb, 13@14; A No. 1, 13; No. 1, 12@18; extracted, white, in 60-lb. cans, 7½; light amber, 7; Florida, in barrels, 6@6½. Beeswax is in light demand at 25@26.
Sept. 19. BLAKE, SCOTT & LEE, Boston, Mass.

PHILADELPHIA. — Honey beginning to sell more freely, but prices are hardly established—so many conflicting reports as to crops. We quote fancy comb, 14@15; No. 1, 12½; No. 2 (amber), 10. Extracted clover, 8; amber, 5½@6. Beeswax, 28.
WM. A. SELSER,
Sept. 20. 10 Vine St., Philadelphia, Pa.

DETROIT.—Fancy white comb, 11@12; A No. 1, 10@11; No. 1, 10; fancy dark, 9@10; No. 1 dark, 8@9; extracted, white, 6@6¼; dark and amber, 5@5½; beeswax, 25@26c.
M. H. HUNT,
Sept. 24. Detroit, Mich.

CHICAGO.—Honey of all kinds is selling well, with the best grades of white steady at 12c; a little fancy white clover has brought 13; off grades of white to amber, 10@11; dark, 8@9. Extracted, white, 6@7; amber, 5@6; dark, 5. Beeswax steady at 27.
R. A. BURNETT & Co.,
Sept. 20. 163 S. Water St., Chicago, Ill.

MINNEAPOLIS.—Fancy white-clover comb, 12@12½; No. 1, 11½@12; amber, 10; darker grades, 7½. Extracted, fancy white, 6@6½; amber, 5½@5¾; dark, 4½@5.
S. H. HALL & Co.,
Sept. 19. Minneapolis, Minn.

COLUMBUS.—We want fine grades of white comb honey. Correspond with us. We quote fancy white, 14@15; No. 1 white, 12@13; No. 2 white, 10@11; amber, 9@10.
THE COLUMBUS COMMISSION & STORAGE Co.,
Sep. 19. 409-413 N. High St., Columbus, O.

CLEVELAND.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½ light amber, 11; buckwheat, 9. Extracted, white, 6½@7; light amber, 5½@6.
A. B. WILLIAMS & Co.,
Sept. 26. 80-82 Broadway, Cleveland, Ohio.

SPRINGFIELD.—Fancy white-clover honey, 15@16c.
Sept. 19. PERKINS & HATCH, Springfield, O.

WANTED.—Extracted honey. Will give my 10-inch foundation-mill in first-class condition for the best offer of extracted honey—white, amber, or buckwheat.
E. W. BROWN, Eden, Erie Co., N. Y.

FOR SALE.—A few tons of buckwheat honey, comb and extracted. Also a small quantity of basswood. Write for prices. Inclose stamps for samples of extracted.
N. L. STEVENS, Venice, Cayuga Co., N. Y.

FOR SALE.—1500 lbs. of comb honey in good shape.
D. F. LASHIER, Hooper, Broome Co., N. Y.

Special Offer. For the next 90 days, we will sell warranted purely mated Italian queens at 50 cts. each; ½ doz., $2.50; tested, 60 cts. each; ½ doz., $3.00. Safe arrival guaranteed. 15 years' experience in queen-rearing.
LEININGER BROS., Fort Jennings, Ohio.

WANTED.—All the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa-clover-honey Cough-drops, and their 48-page illustrated honey-recipe book, "Food Value of Honey," with handsome lithograph cover. All mailed for 10 cents in stamps or silver. Copy of honey-recipe book mailed *free* for the postage, two stamps. Write for wholesale price. Sample box sent for 6 cents.
R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

In writing, mention Gleanings.

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1 lb. 1⅜x4x5 sections, 1c each; 25, 20c; 100, 60c; 500, $2.50
1 lb. 1½ or 1⅞, 4¼ " 1c " 25, 20c; 100, 60c: 500, 2.50

Sent by mail, postage 2c each, for lots of 25 or over, 1c each. **"Facts About Bees"** and sample **carton** by mail for 4 cents in stamps.

F. Danzenbaker, Box 66, Washington, D. C.

QUEENS. 500 tested and untested golden queens for sale during October at way-down prices, to unite nuclei for winter. Inclose 60c for a sample queen; or, if you want a number, write for special prices. Breeders producing faultless 5-banded bees, always on hand, $2.50 each. Leather queens, if you desire, at same price.

W. H. LAWS, Lavaca, Ark.

Wm. A. Selser,

10 Vine St., Philadelphia, Pa.

Honey Expert.

Send a 3 oz. bottle and $1.00, and have the honey tested that you buy. See if it is pure. The most complete laboratory for testing honey in the United States.

QUEENS. **Warranted purely mated,** either golden or imported, by return mail. Untested, ¼ doz., $1.75; select tested, ¼ doz., $2.40; best breeders, $2.00. One **sample** queen to new customer, 55 cts. each. **E. A. Seeley, Bloomer, Ark.**
P. O. M. O. office, Lavaca, Ark.

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These Special Articles will Appear, ... With Others, During the next Ten Weeks.

Bee-keeping in Cuba and Porto Rico.
By O. O. Poppleton, of Florida.

Recent Progress in Apiculture.
By E. R. Root, Editor Gleanings.

Bee-keepers and Supply-manufacturers.
By Dr. C. C. Miller.

Foul Brood in the Apiary.
By Wm. McEvoy, Foul-brood Inspector, Can.

Advanced Methods of Comb-honey Production.
By S. T. Pettit, of Canada.

Migratory Bee-keeping.
By H. E. Hill, Editor *American Bee-keeper.*

The Scientific Side of Apiculture.
By C. P. Dadant.

Experiences and Suggestions in Marketing Honey.
By S. A. Niver, of New York.

Best Method for Creating and Maintaining a Market for Honey.
By Herman F. Moore.

First Half-century of Bee-keeping in America.
By Hon. Eugene Secor, General Manager United States Bee-keepers' Union.

The Apiary on the Farm and in the Orchard.
By Hon. E. Whitcomb, Supt. Apiary Department Trans-Mississippi Exposition.

Needs of Bee Culture in the South.
By Dr. J. P. H. Brown, of Georgia.

General Advice to Bee-keepers.
By Rev. E. T. Abbott, of Missouri.

The Relation Existing between the Apiary and the Successful Production of Fruit.
By G. M. Whitford, of Nebraska.

The foregoing list of Special Articles represents a part of the program at the Omaha Convention. Many of the subjects will be followed by much helpful discussion. Of course, many other interesting and valuable contributions will be found in the *American Bee Journal* during the 10 weeks' "trial trip," besides the other regular departments. But in order to secure all the above articles, the trial subscriptions should be sent in ***promptly.***

Every Bee-keeper in America ought to have the old *American Bee Journal* for 10 weeks from Oct. 1, 1898, and right along thereafter. It will be worth to any one of them ***many times*** its full subscription price. ***Send 10 cents now, anyway,*** and get it for the 10 weeks. Address

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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year
Medina, Ohio.

Vol. XXVI. OCT. 1, 1898. No. 19.

STRAY STRAWS FROM DR. C. C. MILLER

Is the cow pea a honey-plant at Medina? [The blossoms contain honey; but ours seem to have a queer way of bearing many pods almost *without* blossoms.—A. I. R.]

It is pleasant to note the upward tendency of the market, even if one has no honey to sell. But what a wide variation in prices — from 10 to 15 for the best, in the Honey Column!

If these Straws are so late that they get into the last pages of Gleanings, you may know that it's because Editor Ernest stopped to play with me on his way home from Omaha. And a good play we had.

Bee-talk is the best thing with which to fill a bee-paper, and you've gone and filled two or three pages with talk about Medina saloons. But, say; since you've started us on it, please keep us posted how it comes out.

To the excellent answer given, p. 695, Bro. Doolittle might have added that the difference in yield could also be due to locality. Four miles often makes a big difference here, and a friend twelve miles away often has a big yield in the fall when I have none.

"The normal comb is ⅞ inch in thickness," says W. K. Morrison, p. 684. When it's filled with honey and sealed, isn't it 1⅛ to 1¼ thick, counting that bees naturally space 1⅜ to 1½ from center to center? [Your figures are about correct, according to my experience. —Ed.]

As a footnote to what is said, page 703, I may say that, after more than 30 years being dry, Marengo now has saloons. I think it a moderate statement to say that I've seen more drunken men on the streets in the past three months than in ten years before. [Thank you, doctor, for this fact. We will use it as one of our bomb-shells in our temperance fight.—Ed.]

Editor Hutchinson has always loyally kept the Washington rules of grading flying at the head of his Honey Column, but now admits that he never practiced them. He puts fancy and No. 1 all together. So do Boardman and Koeppen. Lots and lots probably do the same thing. If I knew there were enough of them, I'd confess too.

You wouldn't need to send a gross of cups to Mr. Wylie, friend A. I. (p. 701), if he would do as they do "in this locality." A tin cup at a public drinking-place has a number of holes punched in the bottom. You can get a good drink with it, but it isn't worth stealing.

The critic of *Review* says, "Helpful criticism is more than meat and drink to me." I have considerable appetite "along that line" myself, but it's generally agreed among doctors that food is more nourishing, if agreeable to the taste, and I wish, Bro. Taylor, you'd study the art of cookery enough to give us something more agreeable to the taste, and less like medicine. [See editorials.—Ed.]

I asked in a Straw, p. 573, whether it was fair to the worker, a being perfect in its place, to call it an undeveloped female. Critic Taylor says, "It strikes me as entirely fair. The fact that she is well developed in some characteristics having no relation to sex surely can not help her out as a female." You're right, Bro. Taylor; she is an undeveloped female and a perfectly developed worker.

I don't know for sure, but I have the impression that *sometimes* the bees seal up a queen-cell earlier than 8 days from the laying of the egg. At any rate, I've been sometimes surprised to find a very small larva on tearing open a sealed cell. If Mr. Wardell is still rearing queens, perhaps he could tell us how long is the larval period in a strong colony. [The queen-rearing season is nearly over at Medina, but I will ask Mr. Wardell to take some observations.—Ed.]

"The trouble is, so many farmers keep a few bees, . . . and those who make it a business have to suffer for the carelessness of the slipshod farmer bee-keeper — page 691. Editor Abbott ought to labor with F. Boomhower. [In Boomhower's locality, it seemed to me as I went through it that every farmer kept bees. Sometimes he would have a dozen colonies — more often thirty or forty. One might travel for miles in and about *our* vicinity, and see no bee-hives about the farmers' homes. This is a case where locality has every thing to do with the matter.—Ed.]

EDITOR HUTCHINSON is right when he says: "Language that is pure and perfect is certainly to be admired. A journal, the columns of which are plentifully sprinkled with slang, can not, of course, receive the respect of one that uses choice language. At the same time, let us not forget that criticisms on this subject may become hypercritical." It's a pleasure to know that no leading bee-journal is plentifully sprinkled with slang, and it is to be hoped that Editor Hutchinson will abate the "hyper" in his critic.

"DR. DUBINI expresses surprise that so common and cheap a material as turf is never spoken of for smoker-fuel in North America. So far as I know, that substance does not exist here."—*F. L. Thompson, in Review.* I think turf is the same as peat. I've had it by the wagonload, and at one time A. I. Root sold it as smoker-fuel. [Yes, we sold peat for a number of years as smoker-fuel. I think we have a little of it left, but so far as I know there is no call for it now. Planer-shavings or hive-cuttings or rotten wood seem generally to have the preference among bee-keepers, largely because of the availability of the articles mentioned.—ED.]

THE EDITOR beats me in clearly seeing in his own mind W. K. Morrison's hive, p. 685. It seems the sections ought to be spaced apart to let the bees up; but the way Mr. M. speaks of ⅞ comb in 1¼ sections looks just a little as though they were crowded together. I'm also mystified by his saying that only full sheets of foundation must be used, and then saying he puts two small triangles of foundation in each section. [The reference to ⅞ comb in 1¼ sections rather led me at first thought to believe that in your mind's eye you saw more clearly than I the construction of Mr. Morrison's hive. But how could bees get in and out of plain sections when crowded up tight together? Methinks my mental perspective of the Morrison hive may not be incorrect, after all.—ED.]

"IT STANDS TO REASON that the fence gives better ventilation," quoth ye editor, p. 691. Are you sure about that? Freer communication, surely, but how better ventilation? The air can pass only up, down, or sidewise in the plane of the face of the comb, so how can an opening allowing communication transversely help ventilation? [Surely, better communication as well as better ventilation. Suppose, for instance, that the several rooms of a house had communication with each other by means of one door each. There would be a certain amount of ventilation—that is, change of air from one room to another. Now, suppose again that there were several doors to each room. Would not the ventilation be freer as well as the communication? A few reports so far seem to indicate that, with plain sections and fences, there is more rapid ripening of the honey and sealing of the combs.—ED.]

BRO. DOOLITTLE, page 694, gives a story to show that I ought not to back down for his stern "No." Well, notwithstanding some shakiness of the knees, I'll try. Among those who say five days for the larval state stands Dubini. T. W. Cowan, in the 14th edition of "British Bee-keepers' Guide-book," page 10, gives "Time of feeding the larvæ" as 5 days for queen and worker, and 6 for drone. Years ago 17 to 18 days was considered the time for development of queen. Nowadays it is brought down to 15. [If I make no mistake, Mr. Doolittle conducted two experiments, in both of which the results favored six days. Now, perhaps if he had tested the matter a hundred different times, the average might have been nearer five than six. I am under the impression that Mr. Cowan, in drawing his conclusions, did so only after a large number of tests, and from these he drew a general average. A careful and accurate scientist will not usually make a basis of calculation on two experiments. He learns by experience that such a course, while perhaps leading to an approximately correct result, would not lead to what is called scientific accuracy. I know that good authorities disagree; and, really, I do not know which figure is correct.—ED.]

GENERAL CORRESPONDENCE

HOW WE CAME TO USE LARGE HIVES.

More Honey from the Large than the Small Hives.

BY C. P. DADANT.

One correction is needed to the former article, p. 683, at top of page. It reads:

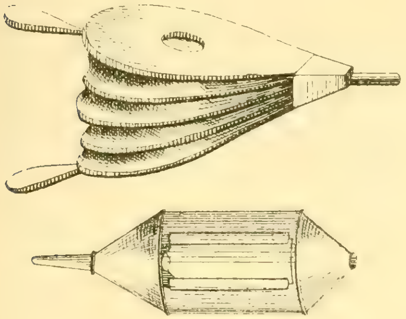
"It would seem that the size of the hive has something to do with the prolificness of the queen, R. L. Taylor to the contrary notwithstanding; for as Mr. Taylor, in one of his late articles, asserts, not one queen in a hundred will lay 2500 eggs daily, continuously, for a certain period. In the same manner, L'Abbe Colin, who used still smaller hives, says in his book," etc.

This is what I meant to say:

"It would seem that the size of hive has something to do with the prolificness of the queen, R. L. Taylor to the contrary notwithstanding; for as Mr. Taylor, in one of his late articles, asserts that not one queen in a hundred will lay 2500 eggs daily, continuously, for a certain period, in the same manner L'Abbe Colin, who used still smaller hives, says in his book: 'We can not estimate at more than 600,'" etc.

I promised you, in my last, to give an account of how we came to use large hives. This is not needed as a practical argument, but it will illustrate the necessity of making many trials before coming to correct ideas and practical methods on any subject.

Although my father had kept bees for years in France, he was still in the dark on many points of bee culture that are to-day clear to every bee-keeper. Bee-keeping was conducted under great difficulties. Movable-frame hives were scarcely known; the bee-smoker, the only kind known, was a cumbrous-looking two-hand bellows, with a sort of horizontal tube filled with punk, rotten wood, or rags, at its extremity, and these bellows had to be kept constantly going or the fire went out and had to be relighted. There were no honey-sections used or known, but a square glass box instead. Comb foundation was unknown; and for a guide in the supers, only small pieces of broken comb were glued, fastened with hot wax. The extractor had not been invented, and he who wanted liquid honey must strain it through a cloth by crushing the comb.



We had come to America to grow grapes and bees; but the grape-growing business was then thrown into the shade by the prevalence of mildew and black rot. A friend of ours gave my father two hives of bees, and this furnished him a start in the direction he followed. He bought the book of H. A. King because it was cheapest, and money was scarce with us. He then made a hive that followed the ideas of both King and Debeauvoys, and had frames nearly square, for this was the size recommended by both these writers.

A little later he bought Quinby's Mysteries of Bee-keeping, and, being struck by Quinby's method's as superior, and also having read of Quinby's great crop of honey, some 20,000 pounds, which was sold at about 30 cents per pound, he made a number of hives after Quinby's pattern, with eight frames, 11x18, inside measurement. These and the King hives, frames 12x13, were kept side by side for a year or two. The supers used were glass boxes 5x6x6, composed of 4 wooden posts, and top and bottom of thin lumber, with glass all around. But these supers were not sufficient; and having read, in the *American Bee Journal*, which had just begun its publication, that Jasper Hazen used side as well as top supers, he manufactured a number of Quinby hives with a capacity for 15 frames, using one movable division-board on each side of the brood-chamber during the spring and fall, and filling the space with supers, such as are mentioned above, in the summer, and with straw or forest-leaves for winter. He even manufactured several hives with a space in the back capable of holding six of those small glass boxes, or three brood-frames. A number of these hives are still in use in our home apiary.

SIDE STORING A FAILURE.

As a matter of course, the side storing, lauded by Jasper Hazen, was nothing but a "fad," and turned out to be an entire failure. The bees worked in the side supers, but never finished them if they had any room at all elsewhere. It was a move in the wrong direction. How many such moves are taken before we get the proper methods! How many new-fangled ideas, or old ideas renovated, are boomed and doted upon, and systematized, like inverting, for instance—systems on which books and books are written before they are realized to be worthless!

Well, in this case it was all a mistake; and as we had the hives, and they were well made, and could accommodate any colony, from the weakest to the largest, we used them. It is probable that, if Mr. Taylor or friend Hutchinson had under his control a few such hives, he might be unable to resist the temptation to increase the room for such queens as would be likely to be somewhat crowded on 8 combs. And if they did this, and had as much room as we did, they might get to think it was a good thing. At any rate, this was how we found that a queen could lay, on an average, over 600 eggs per day, as per Colin, or over 2500 as per Taylor. And when there was honey, the swarm weighed more than 6 pounds, as per Colin, and the crop was more than 14 pounds.

By and by the American hives which had been built to contain only nine frames were torn down and rebuilt with a capacity of 13 to 15 frames. This was overdoing it, will you say? That is true. But how were we to know what a hive of bees could do till we gave them a chance? Don't you think the reason why Colin thought a queen did not have a capacity for laying over 600 eggs per day was owing to the small size of his hives?

With the large hives we found queens that had a capacity of 4500 eggs per day. Exceptions, you will say? Certainly; but it is a very nice thing to give a chance for those exceptions. And I hold that you can not do this as fully with a two-story eight-frame hive as with a hive that may be enlarged, one frame at a time, till it contains all the room that the queen may need. Your eight-frame hive gives her too much room at once when it is doubled in size. If the season is a little cool, there is a chance of delaying the breeding by chilling the combs. The bees will then concentrate themselves upon the brood and keep it within narrow limits, for the queen will seldom go out of the cluster to lay.

Does the number of eggs that we have mentioned seem incredible? Let our reader try an observing-hive. He will learn many things from it; but one thing he will learn is that a queen can lay six eggs in one minute. Take a pencil, and figure how many eggs that would be in twenty-four hours, if she kept it up at this rate. Actual trial having convinced us that large hives are good, we will now say how we came to try the small ten-frame L. hives side by side with the large hives.

For a number of years we imported bees from Italy, and we were in the habit of selling colonies with breeding queens every spring. This was 20 to 24 years ago, when bees were scarcer than they are now. Our Quinby or American hives were not so suitable for sale as the Langstroth, for the great majority of the bee-keepers of this country were already using the Langstroth hive, and it thus became necessary for us to use these hives in order to be able to furnish them to our customers. So, having accidentally undertaken the care of an apiary of 110 colonies in Langstroth ten-frame hives, that belonged to a friend, we decided to build a number of such hives for our own use, and temporarily keep them in our apiary. This was done, and we had occasion, in this manner, to test about 60 colonies in ten-frame Langstroths, which were, a little later, placed side by side with a number of our eleven-frame Quinby hives. This ended in the transfer of all the colonies into large hives, subsequently, after perhaps eight or ten years of trial. Are we deceiving ourselves in the results? If we are, so are the farmers on whose places these out-apiaries have been located; for they universally say that they see the large crops come off the large hives.

In my next I will speak of the change that has taken place in Europe in the size of hives.

Hamilton, Ill.

[Referring to the last paragraph, in which Mr. Dadant says he secures more honey with the ten-frame Langstroth, and that his farmer neighbors round about him secure the same results, I take pleasure in stating that I have talked with some of these same neighbors, and their universal testimony is to that effect.

Mr. Dadant seems doubtful about two-story eight-frame Langstroth colonies being able to rear as much brood as the large Quinbys. I grant that there is something in his point to the effect that, with the large hives and large frames, the queen-breeding capacity can be extended *more gradually* than with the two-story eight-frame Langstroth. But I have usually found that, when the lower hive was filled full of brood and bees, the extra story given at one time would be none too big. But I am frank to acknowledge that I wish the eight-frame hive were more contractible and expansible than it is. I have, therefore, made use of extracting-supers of half Langstroth depth whenever it seemed that the whole Langstroth brood-nest would be too great an increase in hive capacity at one time.

Mr. Dadant makes one point that will bear a little emphasis; namely, that the queen's breeding capacity is regulated somewhat, at least, by the brood-nest.—Ed.]

RAMBLE 153.

A Visit with W. T. Richardson.

BY RAMBLER.

"Hello, Sall! how do the zephyrs strike you in the tree-tops?"

That is just what I felt like shouting; but I put a brake upon that inner nature that is sometimes liable to be unmannerly and lead a fellow into trouble. I desired to shout because I espied a woman up a tree.

Now, if there is any one place where a woman looks as though she had mislaid her sphere it is when climbing a tree; there is nothing graceful in the performance. Maud Muller up a tree would never have captured the judge. This woman was trying to add grace by sawing off a limb; but there was a sad, scared, hesitating movement that would not allow her to get beyond Kipling's characterization of woman—"a bone, a rag, a hank of hair."

When I drew a little nearer I was glad I curbed my desire to shout, for there was a big man at the foot of the ladder. I silently passed by on the far side of the road; for a man who will send a timid woman up a tree to saw wood is fit for strategems and spoils and various other unaccountable things, and I did not wish to be spoiled in that lone place.

This incident occurred while I was on my way up through the San Fernando Valley. This valley stretches away from the east portion of the city of Los Angeles thirty miles to the north, and it is fully twenty miles in width. Large grain-ranches are located here. The Lankersheim ranch contains some thirty-five thousand acres; and, though this journey was taken early in March, the lack of moisture was beginning to make itself felt, and the great grain-fields were looking sickly.

I had a few gates to open, as we always do on these big ranches, for it is cheaper to put in a gate between the great fields than it is to fence the road. I finally drove into the plaza of the buildings of one of the ranches. In front of one of the buildings two ranch hands were lounging, and deriving comfort from cob pipes. I felt free to say hello to these fellows, and, by way of a joke, I said, as I drove straight up to the building, "Well, I see I have got to the end of the road." But there were no jokes in those fellows. With nothing to do upon these ranches the prospects ahead were serious for them, and they viewed every thing else in the same light.

"And is it after driving through gates and corrals that yer expect to find the end of the road in this one?" said one of the men as he jerked his pipe from his mouth. "Yer mistaken, sir; turn to the right, and open the gate ye'll run against, and proceed, and yer 'll soon be on the county road, and see to't yer don't git into another corral."

As I humbly proceeded I moralized somewhat, and remembered that a friend had told me that dry jokes were always a total failure in a dry time, and that the most successful jokers carried along a bottle of bonhommie with which to irrigate their jokes. From his manner of telling it one would suppose they drank the bonhommie; but I surmise it was used on the pocket handkerchief merely as a nasal stimulant. The moral I deduce is, never carry a bottle of any kind, for there is more bonhommie in a canteen of pure water than in all of the bottled concoctions of man.

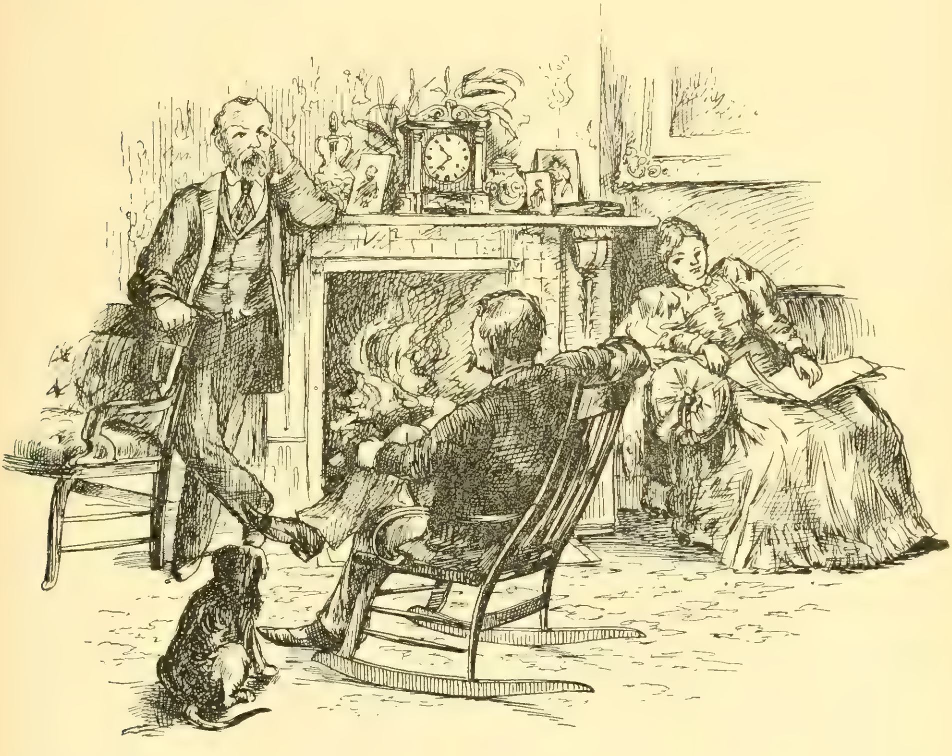
At the head of this valley I find the little town of Chatsworth. There are quite a number of bee-keepers here, and the hotel-keeper where I ate my dinner had a very good word to say respecting them. The most of them were engaged in the fruit business as well as in securing honey.

Here we leave the valley and climb one of those passes that lead over into another valley. These passes with their winding roads are always interesting to the traveler. The rocks are piled in rugged masses; deep gorges yawn, and yonder is a towering peak where the eagle has its eyrie, and where man seldom climbs.

It is somewhat lonesome traveling over these passes alone. You may travel for hours and not meet a soul. The slow gait up one side is followed by a more lively one down the other side. I find myself in the noted Simi Valley; and if there are evidences of a dry season in the San Fernando it is greatly intensified in the Simi. While grain did start in the former, there was none here; and the seed that had been sown had been thrown away, and the fields were as barren as the road in which I was traveling. The few stray cattle to be seen seemed to have become dejected in their futile efforts to supply themselves with food. They seemed to be ready to lean their poor bodies against a tree for support. There was not spirit enough even to switch the tail at the obtrusive fly. The turkey buzzard was on the death-watch, swinging in great circles above, and ready for the ripening of the carcass. Who knows but the famished cattle saw them and knew the fate that awaited them? Poor things!

My objective point in this ramble was the home of Mr. W. T. Richardson, the most extensive bee-keeper in Ventura Co. At the little collection of houses known as Simi I found a little oasis of green, caused by the reviving influence of a few artesian wells. A very cheerful man here directed me to turn through a certain gate and travel another mile or two, and I would find the residence sought for. "You will find the country well gated," said he.

I told him that I had found the San Fernando Valley well supplied in that respect.



"Oh!" said he, "we can beat that valley out of sight." And, indeed, I found this a truthful saying; for in the next two miles I opened gates innumerable; and as the shades of night began to gather I came near being discouraged. Just as I was ready to cry over the prospect of staying out all night in the brush, a house loomed up through the bushes; and, for a wonder, it was inhabited. A kind lady told me that Mr. Richardson lived in the next house. After opening a few more gates I was happy to meet my friend in his own corral, and the anxieties of the evening were over and promptly forgotten. As the evenings in early March are cool we gathered around the ample fireplace. This is a country where

ONE OF W. T. RICHARDSON'S APIARIES, SIMI, CALIFORNIA.

the live-oak thrives; and, Mr. Richardson having a good supply of large oak chunks, they were piled into the fireplace, and the fire roared up the chimney, giving us the very best of cheer.

Mr. Richardson came to California some twenty years ago, and may be termed an old-timer. The early portion of his life was passed in New England. At the age of sixteen he became possessed with that American trait, restlessness; and in order to fill the aching void in his nature he ran away from home and shipped on board a whaler. If his people had caught him on the run he would probably have found whaling enough for all present needs at home. He, however, spent three years on the ocean, and thinks that the hardening of his physical forces has been of benefit to him through all of these later years.

W. T. RICHARDSON, THE LEADING HONEY-PRODUCER IN SOUTHERN CALIFORNIA.

After leaving the whaler he turned his attention to a trade, and became an expert architect. I suppose that, owing to his love for the troubled seas, he embarked for life upon the matrimonial sea. I am assured, however, that the voyage has been one of calms instead of squalls (there are no children in the family).

While engaged in supplying the people of Ventura County with dwellings of the highest architectural skill and beauty he became interested in bee culture, and became ambitious to produce just as much honey as any other person. At the time of my visit Mr. Richardson owned about 1200 colonies. They are located in four apiaries in the Simi Valley. The home apiary is on his own ranch of something over 300 acres. He also has the exclusive right to the bee pasturage on 12,000 acres of land, and that covers about all of the valuable pasturage in the valley. The main source of honey is purple sage.

The next morning Mr. R. started out with his team to show me the beauties of a dry country and a few of his apiaries. The first thing we encountered was a gate. The Simi gates are nearly all barbed-wire affairs of an apparently simple nature, but full of hidden surprises for the fingers and shins, and it requires an expert to handle them. I told Mr. R. that I was an expert in the gate line, and skipped out of the wagon, and won his highest commendation for my skill.

We soon found another gate, and another. Mr. R. would halt before each, and exclaim, "Here, Mr. Rambler, is another gate. I would open it, but do not wish to deprive you of the privilege, for I know you enjoy it."

I do not remember how many miles it was to the first apiary, but I do distinctly remember that it was six gates distant.

Mr. Richardson numbers his apiaries, and the one we now interview is No. 4. The apiaries are worked exclusively for extracted honey; and while for a greater portion of the year Mr. R. is attending to his architectural work he employs a reliable man to attend to the bees. Mr. Day Norris has been in the employ of Mr. R. for some time, and understands his business, and performs it to the entire satisfaction of the owner. In the early spring Mr. R. gets out occasionally for a day to make observations and suggestions; and unless an apiary is to be moved or extra work to be done, Mr. Norris attends to the equalizing, strengthening, and getting the bees in the best possible condition for the honey season.

With a full complement of extracting-combs this is not so arduous a job as might appear. When the extracting season opens, other men are employed; and instead of placing a man in each apiary, with exclusive charge, the men move from one apiary to the other in a crew; and, while there is an occasional swarm, there are not enough to pay to employ a man to remain in the apiary to watch them. The hive used in these apiaries is a little deeper and shorter than the L. hive. I think the frame is nearly 11 inches deep and 14 in length. Each apiary has its complement of tools and extracting-house, and there is no movement of implements from one apiary to the other.

I present in the accompanying photo one of the finest of Mr. Richardson's apiaries, containing 400 colonies, and located in the midst of hundreds of acres of purple sage. In the immediate foreground are stools of sage as it appears in the early spring, while the hill beyond is completely covered with it. There is comfort in this apiary from its being shaded with a few live-oaks. The parties shown in the foreground are Mr. Richardson and his trusted helper Mr. Norris. In our next I will give some further idea of the magnitude of Mr. Richardson's honey-yields.

* * *

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of S. Brooks.

Our illustration represents the modest little apiary of Mr. S. Brooks, who stands on the left in picture. Mr. Brooks has some substantial claim to be considered a teacher in bee-craft, having had as pupils among others several of the nuns at Abbot Lea, Abbotskirkwell, and under his supervision these ladies are managing a successful apiary of their own.

We learn from Mr. Brooks that he has been a bee-keeper nearly twenty years, his first start being brought about by seeing some straw skeps at a farmhouse he had occasion to visit. Though only a boy of fifteen at the time, he bargained with the old dame who owned the skeps to pay her $2.40 for a swarm which she said would be coming off in two or three days. Accordingly, he went—accompanied by a bee-keeper of more matured experience and years than himself—two days later, and was told on arrival that two swarms had come off, and he could take his choice. This he did, as that other boy did who said, "I don't want to be greedy, so I'll take the heaviest."

APIARY OF S. BROOKS.—FROM BRITISH BEE JOURNAL.

From this small beginning he began the following year to make frame hives, after buying one as a pattern, and got a friend to teach him "the ways of modern bee-keeping." He then, in writing us particulars, goes on to say, "I have at present twelve hives, including skeps, which I keep for supplying swarms. The district around here is fairly good for honey, as we have plenty of orchards and fruit-trees about. My own crops are not very large compared with some whose bees are kept further out in the country. I average about 40 lbs. per colony yearly, and as an exhibitor at local shows I have taken several first prizes. Nor have I ever experienced any difficulty in selling my crop; in fact, in some years I have to buy to keep my regular customers supplied." In concluding his remarks Mr. Brooks says, "I am a ropemaker by trade, and work with my father, so that, being on the spot, I am always at hand in case of swarms."—*British Bee Journal.*

* * *

A POINT IN QUEEN-REARING.

Will Bees, when Left to Themselves, Select such Larvæ as will Rear the Best Queens?

BY DR. C. C. MILLER.

In reply to a questioner, I favored the idea that, left to themselves, bees might rear as good queens as when they were restricted to eggs or larvæ of a certain age. Referring to this, Hon. R. L. Taylor says in *Review :*

"He argues (*A. B. J.*, 295) that in a colony made queenless, with eggs and larvæ of all ages present, it looks rather reasonable that the bees will select what will make the best queens if it is left entirely to them. It may look reasonable that they should, but they don't; at least, they don't altogether; and the trouble is that, when they err, as they generally do, I suppose, from their eagerness to get a queen as soon as possible, by selecting one or more larvæ for the purpose that are too old to produce the best queens, the queens from such hatch first, and so the later and better ones are destroyed. The remedy is to remove the larvæ, in four or five days, from all but three or four of the most satisfactory cells."

So important is it to have the best queens possible, that the matter should be very seriously considered before following a plan that, in Mr. Taylor's judgment, would bring such bad results.

One might suppose that, if the bees have intelligence enough to select an older larva because it would give them an earlier queen, their intelligence might carry them a step farther, and make them willing to wait for a better queen. But it isn't always safe to trust the bees to do what might seem best to reasoning creatures. In some cases man's reason comes in to direct the bees. Mr. Taylor says when the matter is left to the choice of the bees "they don't" select what will make the best queens. In their hurry they select larvæ too old. Scientists tell us that the food the worker larva gets for the first three days is the same as the royal larva gets throughout its entire existence, and that a larva three days from the egg is as good as the best to produce a queen. So the difference between a worker and a queen is made in the last two or three days of feeding before it is sealed up. But although the difference is made in that two or three days, it makes more than that length of time in the development, for the worker is five or six days longer in coming to maturity than the queen.

Now, suppose a queen is taken away from a colony, there being present eggs and brood in all stages. One set of bees say, "Here's a larva three days old; we'll rear a queen from that." Another set says, "Here's a larva two or three days older, just ready to be sealed over; let us rear a queen from this, and we shall have a queen two or three days sooner." Now, this latter larva, if it were continued as a worker, would not emerge from its cell until 21 days from the laying of the egg; and, changing from its original destination so late in life, it will be only an abortive sort of queen, taking nearly as long to develop as a worker; so it will turn out that the larva three days old will come out of its cell sooner than its older sister. In general, it may be said that any larva more than three days old in a worker-cell has had a change in its food unfitting it for a perfect queen, and lengthening the time of its maturing so much that any gain in the way of age will be more than counterbalanced by the longer time it remains in the cell after being sealed up. Considered in that light, is it not easy to see that it is not possible for any queen to emerge from its cell earlier than one from a larva three days old?

Keep in mind that the oldest larva that is unsealed in a worker-cell is only two or three days older than a three-day larva that will produce a perfect queen, and that, after the first three days of its existence as a larva, every day that it grows older before it is chosen for a queen makes more than a day's difference in the time it remains sealed up.

Let us look at the matter in a little different way. How long does it take from the laying of the egg to the emerging of the queen, under favorable conditions in a full colony? Forty years ago 17 to 18 days was considered the right answer. On page 199 of the *American Bee Journal*, Vol. I., 1861, no less an authority than the baron of Berlepsch gives, as the result of very careful observation, that in one case the queen emerged in 18 days, and in a second case in 17 days. He then remarks, "These experiments show that the opinion generally entertained, that the queens emerge between the seventeenth and eighteenth day after the eggs are laid, is correct." But Berlepsch used a *small* forced swarm or nucleus, and it will hardly do to take that as a basis for what would happen in a full colony. At any rate, the time has been shortened since then, and most of the text-books now give 16 days. Cowan gives 15; and as he is a careful observer, and, withal, properly conservative, it is not likely he would so far depart from the traditions of the fathers without being very sure of his ground. So it is safe to say that 15 days is correct.

Another question: "When a queen is taken from a strong colony, the bees being left to their own devices as to raising a queen, how long is it from the removal of the queen to the emerging of the first young queen from her cell?" Perhaps something like 12 days is given, and I do not remember ever to have seen any record of the emerging of the young queen any sooner than the tenth day after the removal of the old queen. A somewhat large experience of my own confirms this view.

Now, suppose a queen emerges ten days after the colony is unqueened. How old was that queen, or, rather, that larva, when the bees began to treat it as a thing of royalty? Ten days taken from its entire inter-cell life of 15 days leaves 5 days as its age from the laying of the egg, or 2 days of age as a larva. Allowing that the bees did not discover their queenlessness immediately, there is still leeway enough to assure the selection of the larva before it was older than three days. When the young queen emerges 11 or 12 days after unqueening, then a still younger larva must have been chosen. On this point Berlepsch says on the page I have already quoted from, "I will only add, in passing, that the bees do not, as is commonly stated in the books, usually select a larva *three* days old, but in most cases a younger one."

I know it is a quite commonly accepted belief that bees left to themselves select larvæ too old for the best queens; but it is high time to lay such beliefs aside. The truth is, they don't make such mis-choice; and if they did, such old larvæ would emerge as queens later than their younger sisters. A larva chosen at the time of weaning, at three days old, will emerge a perfect queen at an earlier date than any other larva either older or younger.

So there is no need of any remedy such as Mr. Taylor proposes, "to remove the larvæ, in four or five days, from all but three or four of the most satisfactory cells." Even if such remedy were necessary, how many are there who can tell which are the most satisfactory cells?

In the hands of experts, I believe queens as good as the best can be raised by confining the bees to eggs or larvæ of a certain age, but they will average no better queens than will be reared by the bees when they have brood of all ages from which to select. In the hands of the common honey-producer, the best queens will be reared by allowing the bees their own way, and then, when the cells have been sealed in a strong colony, letting the nucleus or colony in which the queen is to be kept till laying have several cells from which to select. I know that I have reared hundreds of good queens in that way, and there is less chance for miscarriage thereby than in any of the other ways that may be advisable for queen-rearing specialists.

Marengo, Ill.

[My own experience of several years ago, when I was doing the queen-rearing at the Home of the Honey-bees, and the experience of our Mr. Wardell, who is now doing that same work, would rather lead me to lean toward Mr. Taylor's position; namely, that, when a colony is made queenless of eggs and larvæ of all ages, they do not as a rule "select what will make the best queens." I have sometimes thought that, when they find themselves suddenly deprived of their mother, they are in such haste to supply the deficiency that they start with any thing they can get; but, on the other hand, when they are about to supersede a queen there is no hurry; neither is there need of any haste during the swarming season, for they have in either case plenty of time, not only to do good selecting, but to do good work. Our recent experience shows that, in order to get good queens under any circumstances, a moderate honey-flow or moderate feeding is an important requisite.—Ed.]

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THE WORKER-BEE A PERFECT BEE.

The Dzierzon vs. the Dickel Theory, Regarding the Control of the Sex; Second Entrances; Cotton Batting for Calking Old Hives; a Simple Introducing-cage; a Novel Method of Introducing Queens by means of a Cage made of Foundation.

BY F. GREINER.

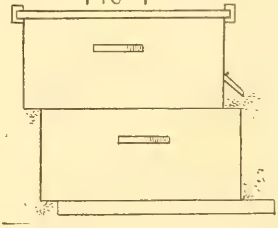
When reading the Aug. 1st issue of Gleanings, different things suggested themselves to my communicative mind; and while I think of them I will jot them down.

Dr. Miller, in Stray Straws, speaks of the worker-bee and the queen, the former as being generally considered a dwarfed or undeveloped female. As he further says, each is a perfect being of its kind, each made for a special purpose, and so they are beginning to be regarded by good authorities on bees, and by scientists in this and other lands. What is most remarkable in this matter of queen and worker-bee is the fact that the nurse-bees have it in their power, even at so late an hour as when the worker-bee larvæ have already reached a very advanced stage of development, to still bring either a queen or a worker-bee to maturity. This in the face of the fact that the queen is minus some organs and faculties the worker-bees do possess. I reason it out like this: The worker and queen larvæ are perhaps exactly alike up to within two days of the end of their growing or larval period; that they act as a sort of storeroom for certain foods administered during the last two days, and to be assimilated or used during the pupa stage for the perfection of the insect, and that this further and final development in the cell after being sealed is in accordance with the kind, quality, and perhaps amount of food thus stored. Let us bear in mind what a power the worker-bee here exercises on the offspring. Some of our German scientific bee-keepers go still further. Although few doubts have been expressed for years as to the soundness of the Dzierzon theory, according to which the queen alone determines at will what her offspring shall be, male or female, yet of late this "Dzierzon theory" has been attacked by F. Dickel, present editor of the *Bienen Zeitung* (formerly edited by Vogel). The proof seems to be strong, I must admit; but after all I have grave doubts. Dickel seems to show that the eggs, as laid by a normally fertile queen, are indifferent as to sex. Or if that does not quite express it, the male and female rudimentary beginnings are both present in the egg, both equally strong, and it is owing solely to the influence of the worker-bee which one is to develop.

We have long been convinced that the workers are the leading power in the home affairs of the hive, and it may be that their will here is decisive also. When I get a little more leisure I will try to show just what the Dickel theory is.

In another Straw, Dr. Miller speaks of giving ventilation and giving a second entrance when two brood-stories are being used. Why not give this second entrance by sliding the top story back far enough to suit one's ideas as to the amount of ventilation? By sliding the bottom story back over the floor-board, an entrance may be given there also. So we have it in our power to provide as many as four entrances when using two brood-chambers, without interfering with the usual bee-spaces. If the top story is slid back, that, of course, would allow the rain to beat in at the front, and a suitable provision will have to be made. A piece of pine lumber, beveled on one edge, and temporarily tacked on as shown in Fig. 1, answers the purpose. My little girls speak of our hives thus arranged as the hives with stoops for the bees.

Fig 1



Cotton batting for calking up old box hives serves a good purpose; but with well-made hives of modern construction none will be needed. I have just moved a few loads of bees into other pastures (buckwheat) without mishap, although the roads were in bad condition owing to heavy rains and washouts.

This season has been a remarkable one for storing pollen in the sections. Contraction has done it in connection with the extremely light honey-flow. When the flowers yield abundantly in nectar, very little pollen is brought in — seldom more than is needed for immediate consumption. Contraction may then be carried to the extreme when section honey is the object.

Successful introduction of a queen : It may be an old thing, but it will bear repeating. Select a comb with brood just hatching; allow the queen to pass from the cage on to this ; and when she is in the right place, where bees are hatching out most, confine her to this spot by means of a little shallow wire-cloth box like Fig. 3, the box to be about 1½ inches square, and simply made of a square piece of wire cloth as in Fig. 2. The raveled ends of the wire, when pushed into the comb, hold the cage in place. They may kill a few unhatched bees in their cells, but I find this method pretty safe to introduce even a valuable queen. It is not absolutely necessary that honey should be inclosed under the box. I have watched this carefully. The outside bees feed the hatching young as well as the queen till the cage is removed or the confined bees liberated by the bees outside.

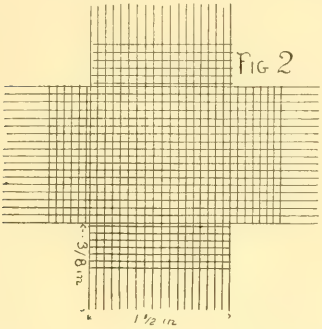


Fig 2

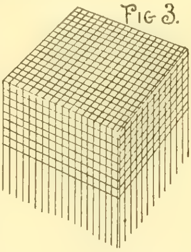


Fig. 3.

Another novel way for introducing queens has been practiced successfully by our German friends across the water for a number of years. They make a cage of comb foundation by rolling a piece of the proper size around a finger. They then pinch one end shut, and make a few perforations with an awl or the point of a penknife. It is now ready to receive the queen; and after she has run in, the cage is closed by pinching it shut. Thus the caged queen is inserted between two combs. This method has the advantage that one will not have to look after the cage, as the bees will remove it themselves, after the queen is safely installed. Try it. *Probatum est !*

Queen-cells I seldom fasten otherwise than by pushing the butt-end into some portion of unoccupied soft comb. That seems to be sufficient.

Are bees partial to any particular color? Well, I thought it was accepted as a fact that they do not take kindly to dark colors. I might mention here what has almost become proverbial, their sometimes getting mad enough to sting a stovepipe. Try this : Stand an opened smoker without fuel, or with the fuel burned down, on the top of a bee-hive in the bee-yard, especially at a time when the bees are inclined to be cross, and then see them dive into the dark abyss. I no longer wear a particularly fuzzy black hat or black pants when doing any kind of work among the bees. I should prefer clear white for a bee-suit, if it were not for its showing dirt more than dark. Some writers have made the claim that bees can not see or correctly locate any thing white, giving that as the reason why many bees fly right into the snow in the early spring, or at any other time when it is warm enough for them to fly and snow is present. I am not quite satisfied as to that. There is no guesswork about it, but we know they can well locate white blossoms. They also seem to regard my wife's white sheets and other clothes on the line as obstructions. I have never seen them bump their heads on them, as they very frequently do on my telephone wire.

Dr. Miller condemns the practice of adding resin to beeswax to make the mixture more adhesive when used to fasten comb foundation into frames, on the ground that we might thus adulterate our beeswax. Propolis used instead of resin answers pretty well the same purpose ; and since all of our old combs are more or less coated with this substance anyway, the objection to its use in the way indicated would not be as great.

Naples, N. Y.

[I have personally tried queen-cages made on the plan of Figs. 2 and 3, and know they usually if not invariably give good results. But such cages have been largely set aside because the majority of mailing-cages are also introducing-cages.

I have never tried introducing a fertile queen in a sort of artificial queen-cell made up of foundation; but I see no reason why it would not work. I hope to have our apiarist try it at his earliest opportunity.—Ed.]

THE SEASON IN CALIFORNIA.

The Low Price of Honey Notwithstanding its Scarcity.

BY W. A. PRYAL.

The year 1898 has become sufficiently a thing of the past, looking at it from a beekeeper's standpoint, to justify speaking of it in the past tense. It is a year that will long be remembered by our fraternity in this State as one that was fraught with many discouraging features, the worst of which was a lack of sufficient rain to cause the honey-producing flora to yield nectar for the provisioning of the hive for "home consumption," to put it in that way ; at least, this was the case in the greater portion of the State where bees are kept for profit. Then in some sections there was an entire absence of moisture, thereby preventing any growth whatever of vegetation. In these places the bee-men were in sore straits as to whether it was advisable to let their bees starve or to feed them, or move them to a place where they could find sufficient pasturage to sustain them till the opening of a more propitious year. The latter places were to be found in the irrigated sections, along the rivers, and in the northern and some of the central portions of the State.

I heard of one bee-keeper in the southern counties (and I suppose he is not the only one) who believed that it was better and cheaper to let all colonies that were not able to sustain themselves through the term of scarcity starve rather than feed them. With him it was a case of "the survival of the fittest." This is not altogether good policy, especially since, if all the colonies were weak, the whole apiary would starve out and the bee-keeper would have no bees to begin a year of plenty with.

From what I have been able to learn there has been a medium crop of honey in the northern coast and mountain counties. Several months ago I saw in a commission house in San Francisco a fine consignment of delicious light-amber honey that came from an apiary in Monterey Co. I should think it was the first of this year's crop to reach that market. Even at that time, when it was well known that there was to be an almost entire failure of the honey crop in this State, I was told that dealers were offering a little less than five cents for this fine honey. Even then it did not move off with that rapidity one would expect such beautiful new honey to do. I should not wonder if it was the first of this year's crop that reached the San Francisco market. There must be something wrong with the honey-dealers in that city when they do not do more to keep the price of honey at a higher figure. Here was a good grade of honey selling at least a cent a pound less than it should, since there was to be no crop to speak of produced in this State this year. Even now I learn when, it may be said, as just after an election, all the returns are in, and it is clearly shown that there is a marked falling-off in the honey crop of the entire country, there is no upward tendency of the honey market, as one has reason to expect under the conditions mentioned.

Bee-keepers should hold their crop; they should not be too ready to accept the offer of the first dealer who presents himself. Wait until the output of the season is pretty well determined before negotiating for the disposal of the year's crop. If bee-keepers would do more to keep up the price of their product the industry would not be in such a poor condition to-day.

I did not work more than two-thirds of the colonies in my apiary this year. The yield per hive for those worked is 80 lbs. of extracted honey. The honey is mostly darker than usual, and of heavy body. I never saw honey granulate so soon as the product of the hives for this season. In about two weeks it would commence to show signs of candying, and in a month it would be quite solid. I think one reason it did this is owing to the large amount of alfilaree nectar which the bees gathered. I never knew this plant to remain so long in bloom as it did the past season. I think it began to bloom about the middle of November, and continued to do so sparingly until February, when it came into full bloom and continued to do so till the middle of May, after which it gradually "slacked off." Some plants in moist situations are still putting forth their little flowers. From the way the bees worked on the flowers of this plant I should judge that it yielded nectar very freely this year. And this, no doubt, accounts for the rapid granulation of the honey I have mentioned. I learned that, in previous years, alfilaree honey soon candied, but never did I experience such rapid transformation of liquid honey into the granulated article.

AN EASY METHOD TO CURE BEE-PARALYSIS.

Some four years ago I noticed what I took to be the first case of this disease that ever came under my observation. It was not a very bad form. As I was afraid it might spread and affect other colonies in the apiary I called the attention of Prof. Woodward, of our State University, to the matter. He took some of the affected bees for diagnosis, but I never heard from him concerning them. This spring I saw that two colonies that had been suffering quite severely for some months previously were getting worse. I had never seen a case of what was known to be really "bee-paralysis," so called. I wrote to a well-known authority upon bees and their diseases, describing the malady that troubled said colonies, and received reply that they were, in all probability, afflicted with the well-known "wig-wagging" disease that heads this paragraph. He could not give any remedy that was known to be a positive cure. I had read somewhere that substituting new queens would cause the malady to disappear. I tried this, but it did not do any good. The bees of one of the colonies were dwindling away quite rapidly; bees by the hundred would crawl from the hive each morning, and go wig-wagging away from the hive as fast as their "unseaworthy" legs would carry them. At times there would be a quart of dead bees in front of this colony. The other one, which was some distance away, was nearly as bad. As a last resort I thought I would try a remedy casually mentioned the fore part of this year, either in GLEANINGS or in the *Am. Bee Journal*, I forget which. The writer of the article in question asked if any one had tried exchanging locations with colonies afflicted with bee-paralysis. He had tried it, and found that it worked like a charm in banishing the disease. I waited, hoping to hear from some one else before giving it a trial. As no one seemed to give further experience in this direction I thought I would try it anyway. The result was magical. The change of places was made at a time when honey was coming in freely, and the bees did nothing to show that they disliked the strange bees that were necessarily mixed up in their respective hives. Where the afflicted bees went to I do not know. One thing, there were no more dead bees in front of either hive.

To make myself more clear I will state that I exchanged an unwell colony for a well one, the latter being placed on the stand occupied by the former. It is now many months since this transformation took place in these colonies, and from that time to this not a single "wig-wagging" bee have I seen in the apiary. What caused this disease to disappear so rapidly under such an easy operation, where really nothing was done to change the former life and conditions of the bees, is something that puzzles me as much as the question, "What is bee-paralysis?" Can it be that it was caused by some electrical disturbance, the changing of location causing a change of current? Yet I do not see how it can be this, for would not the hive that took the place of the removed one be soon afflicted also?

THE WEE BEE-MOTH.

This little moth is becoming quite an annoyance in the apiaries in this part of the State. While it does not usually carry on its depredations within the hives as do the well-known large bee-moth, still any combs that are left exposed, especially those containing pollen, are soon preyed upon by this little fellow. They are not so easy to follow up and destroy as his more lusty companion in destruction. My observations regarding them during the past year show that they fly about during the day, thus differing from the common bee-moth. I saw a lot of combs, some of them nice new ones free from pollen, destroyed by this wee moth, and the big fellows could not have been more destructive.

North Temescal, Cal., Aug. 27.

[There may be no upward tendency in the honey market in California; but the scarcity of our product in the East has had a very perceptible effect on *our* market. Last year, comb honey averaged 9 and 10 cents; but now it runs more nearly 12 and 14 in a wholesale way. I was a little surprised at this myself; for in former years, when there has been a scarcity, there has been little if any stiffening of prices — at least not in proportion to what we might expect; but the very poor yield this season—the poorest that we have known in years—has had quite a decided effect.

Regarding the cure of bee-paralysis, I do not know but the plan outlined above is the most sensible of any thing that has yet been proposed; and if it is a fact that it accomplishes the result, it is high time we were trying the cure. I wish, therefore, that those of our friends who have bees afflicted with this peculiar disease would try this exchanging plan, and report.—ED.]

J. R. P., Ala.—It is evident from what you state in your letter that one of the colonies that swarmed out had no queen. As they failed to find her in the new hive, they went back to the parent hive. This is precisely what they would do if they lost the queen while in the air.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

GRADING HONEY; DOOLITTLE'S POSITION AGAIN DEFINED; DOES NOT RECOMMEND OR PRACTICE FACING.

Question.—Have you read what is said under "The Grading of Honey," found on page 276 of *Review* for September? If so, will you tell the readers of GLEANINGS what you think of the ideas of friends Boardman, Koeppen, and Hutchinson in this matter? If we are to follow these "lights," and put all the "Fancy" and "No. 1" white honey together, how are we to do in the matter of "facing" the crates? Or, in other words, which shall we put next the glass in the crates—the fancy or the No. 1?

Answer.—I should have preferred that this query had not come up just at the present time, only such a little while after the editor had shut down on any thing further regarding the facing of honey; but as it is a *live* question, and comes just in a "*live*" time, I think the editor will let it go in, even did he think enough had been said on the "facing" matter only a little while ago. I notice that Bro. Boardman is quoted as saying that "we get no more for our fancy than we would for both fancy and No. 1 crated together." After the fancy is sold, No. 1 is hard to sell, and we must sell it at a low figure." And I wish to say that the experience of Bro. B. is just my experience, when both No. 1 and fancy are shipped to the same commission house. I have repeatedly said that no person can carry the difference "in the eye" between fancy and No. 1 honey ten rods, or even up a flight of stairs. What I mean by this is, let the best judge of comb honey look at No. 1 on the ground floor of a building, then go up a flight of stairs and look at a lot of fancy honey, and, upon close questioning, he will tell you that he sees very little difference in the two lots. Yea, more: Face one side of a crate with fancy honey, and the other side with No. 1 honey, and ask the ordinary man which of the two sides is the nicer, and you will see him step first from one side to the other, then back again, then to the first side again, then back once more, when he will tell you he sees very little difference. But you place a crate of fancy and a crate of No. 1 honey side by side, or one on top of the other, and any "novice" will tell you that the fancy looks the nicer. And why the No. 1 does not sell as well as the fancy, where both are shipped to one commission house, is because the commission man sees the two side by side, and forms the opinion that No. 1 is not as good as the fancy, and so, after the fancy is all sold, he tells his customers he has been selling fancy honey at 15 cents, but he has some on hand that is not quite as good, and he will take 13 for it. When he admits that "not quite as good" he gives the purchaser a "leverage," and the purchaser *uses* it too, so offers him 11 or 12 cents for it, and gets it at his own figures, as a rule.

Now, after years of experience I have learned better than to ship both fancy and No. 1 to the same man, so I ship the first to one party and the second to another; and the truth of the matter is, the No. 1 more often sells for the higher figure than does the fancy, though it more often happens that both sell for the same figure.

I am a little surprised at the admission of Bro. Hutchinson that "I have never practiced these Washington rules for grading," for I supposed the publishers quoting honey that way used these same rules when grading what honey they produce. I practice those rules of grading, but use X's as the better terms, instead of "Fancy," "No. 1," "No. 2," etc. For that which would go in the fancy grade, I use XXX; for the No. 1, I use XX, and for lower grades of white honey I use X. And the same grading is used on all dark or buckwheat honey. As I have before stated, these X's are conveniently placed in the handholes of the crates, and so, when getting the honey ready to ship off, it is easily sorted without comparing "faces," should it sit where face comparison is not easily done.

Regarding the last question asked by our correspondent, I hardly know what to say. I did not suppose any one put up honey by putting both No. 1 and fancy in the same crate. And I should like to shift this question off for Bros. Hutchinson, Koeppen, and Boardman to answer. Will they please tell us how they do?

In a late number of the *Southland Queen* the editor asks all who put the poorest-looking sections next the glass, when crating honey, to "hold up hands." But as I have seen no hands up I must take it for granted that these parties put the fancy on the outside and the No. 1 in the middle; and if so, and they send out such cases of honey as "Fancy" *honey*, Bros. York, Hasty, and Dr. Miller will have to whet their swords again for a new battle, after trying to slay Doolittle, when *he* neither did nor even recommended such a thing. Just what I do do, and just what I recommend, is an honest sorting of honey by the X plan as given above, then pick the "prettiest faces" out of each lot and place them on the outside. I never allow a single section of XX honey to go into a XXX crate, much less an X section, unless it is the last two or three cases in finishing up the season's work, when "odds and ends" are put together and marked M, which means "a mixed lot." Were I to put No. 1 and fancy together, the only honest way, as I should consider it, to crate such honey would be to face one side of the crate with fancy honey, and the other side with No. 1. And I will guarantee that nine purchasers out of ten would not know which side was fancy and which side was No. 1 were they given only just one crate at a time to look at. But did they have two to look at, and the No. 1 side of one case and the fancy side of the other were placed toward him, he would choose the fancy case every time. Then when he took it home, opened it, and set out the fancy and No. 1 side by side, he would think he had been "cheated;" but not till he did this. But he would be cheated only as to *looks*, as the number one would be just as well flavored. Will Messrs. H.'s, K.'s, and B.'s conscience allow of even looks cheating?

HEADS OF GRAIN FROM DIFFERENT FIELDS

FOREIGN MATTER IN HONEY-COMB.

I send you with this a piece of newly made comb—the roughest and altogether the worst-looking comb I ever saw, made when I had reason to expect the very nicest white comb if any. There is no honey coming in now. Our fall flow commences about the 15th or 20th of August. The colony that made this comb is in an eight-frame hive, and is on scales. I have been feeding them granulated sugar and water for a little more than a week for two reasons: First, I wanted to know how the increase in weight compared with the amount fed. Second, I wished to test the Boardman idea a little. So far I have fed 18 lbs. of sugar —equal, perhaps, to 25 lbs. of syrup as thick as honey. The gain in weight is 16 lbs. I have fed in a division-board feeder, put in a second hive-body, nearly filling up with dummies, and a piece of partly wool carpet over the feeder and dummies—flat cover over all.

A day or two ago I found they had gnawed a hole through the carpet, and had commenced building comb. I at once took the comb from them and put in another division-board so they could build no more. If you examine the comb with the aid of a glass you will see that the bees have utilized the wool from the carpet, in forming cells, something as a bird uses similar material in building her nest.

O. S. Rexford.

Winsted, Ct., Aug. 8, 1898.

[The sample of comb was received, and is quite remarkable. The bases as well as the walls are very thick and heavy—almost $\frac{1}{16}$ of an inch thick instead of being the regulation thickness, $\frac{3}{1000}$; and, as Mr. Rexford well says, there is burlap scattered all the way through the comb. Bees have been known to to do this before, but I never saw a sample where they seemed to throw in so much forforeign matter.

It appears from the tests above given, that, in feeding sugar syrup, considerable of it was lost somewhere, probably in brood-rearing, besides what the bees actually consumed.—Ed.]

MOVING BEES IN SACKS OF BURLAP.

In Straw No. 7, Aug. 1, you have a footnote in regard to using cotton batting for calking purposes when moving bees, in which you say, "This is a kink worth knowing. Paste it in your hat." That is all right, but I can show you a trick worth two of it. If you have old hives full of holes, plug them up with batting or old rags. Ventilate them so they will not smother, then get some burlap and make a sack which will hold the hive nicely, and, after fastening the top and bottom boards on tightly, put the hive into the sack and sew it up as you would a sack of barley or wheat, and you can drive over rough or rocky roads, or any kind, and not a bee can get out to bother man or beast. I have moved hundreds of them in this way without accident of any kind.

I thought every one knew that bees dislike dark colors. If any one doubts this, let him, after extracting in light clothing for a few days, until the bees get thoroughly roiled up, go out among them dressed in black. If he is not convinced I will treat to the doughnuts.

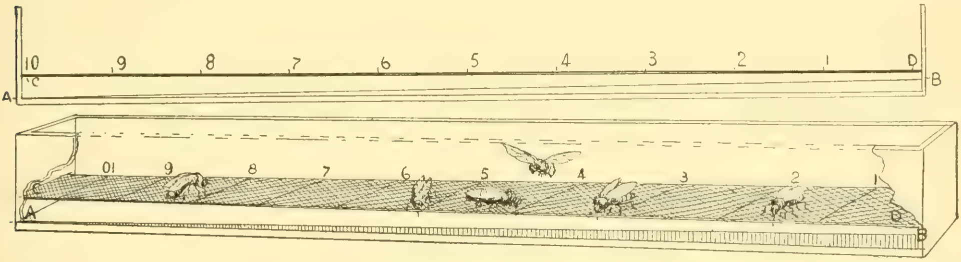
Los Alamos, Cal. JOEL HILTON.

[To put every hive in a sack strikes me as being a good deal of labor. I'd prefer to have a few bees get out than to go to so much trouble.—ED.]

DR. MILLER'S GLOSSOMETER.

I couldn't resist the temptation to stop writing Straws long enough to give you my conception of a simple glossometer. I don't know whether it's original or not. A box 12 inches long or longer (important to have it as long as possible), 2 inches wide, 1 inch deep. An inside bottom, *a*, *b*, inclining at the proper angle, and a covering of something like wire cloth, *c*, *d*. That's the whole story. Not quite, for across the bottom must be lines regularly placed, measuring it off. At *d* the depth is such that any common plug of a bee can reach the feed and lower it to 1. One with a little longer tongue can lower it to 2. No bee in the apiary can lower it to more than 5 or 6, and it is left for future generations to get it down to 10. The Frenchmen say there's quite a variation in the length of bees' tongues in the same apiary. Level a hive perfectly, put the thing into an empty super, cover up, and, after the bees have had time to lower it, make your entry. For company, one could be made with a glass cover so you could see 'em stretch their tongues. C. C. MILLER.

Marengo, Ill.



[I am very sorry, doctor, but somehow I have not the ambition or enthusiasm to make any thing of this kind; but if you will go ahead and have it tested I will give you all the space in GLEANINGS you want, to tell about it. The glossometer is your hobby—yes, your baby.—ED.]

ANOTHER ACCOUNT OF THE BAD WORK FOUL BROOD IS DOING IN NORTHEASTERN NEW YORK.

We have just returned from a visit to the various bee-keepers throughout Albany and Schoharie Counties, and we must say they are a splendid lot of fellows, and did every thing to make our visit pleasant. All of them wanted us to look over their stock of bees; but, not expecting to embark in the business, we declined, and came home without a sting.

Foul brood, as they call it, has made its appearance in many yards in certain localities, and fears are entertained that it will spread throughout these entire counties, notwithstanding that nearly all hives affected with it have been destroyed by burning up bees, brood, and honey. Some producers, losing their entire stock, have had to retire from the business. We came across one man who had lost all but two colonies, and these two have produced him over 400 pounds of honey. The loss of the others seems to have given these two a better opportunity to gather honey.

The crop of buckwheat comb and extracted will be quite large, but clover is a short crop. The quality is fine. CHAS. MCCULLOCH.

Schenectady, N. Y., Sept. 15.

DEEP ENTRANCES AND SHADE-TREES.

I have just read GLEANINGS for Aug. 15, and note what Mr. Doolittle says about deep entrances doing away with bees clustering out. I had 24 colonies in eight-frame L. hives this season, and had 8 swarms issue, which I hived in new Dovetail hives, eight-frame, with Hoffman self-spacing brood-frames. I raised the rear end of these hives about ½-inch, or enough to give pitch so water would run out if driven in by heavy storms, then I raised the front of hive (not bottom-board) ¼ inch, which gave me an entrance ⅝-inch deep. The bees in the deep-entrance hives did not cluster out as did those with a shallow entrance, but they did cluster under the brood-frames, and did not seem to work as they do in cooler weather. The question in my mind is this: Was the entrance deep enough, or is the weather sometimes too warm for bees to work actively? or was the inactivity caused by a light honey-flow, and those bees I noticed seemingly doing nothing, house-bees who had no honey to do with? These questions, it seems to me, are all of importance, as the more the bee-keeper can control surrounding conditions to induce greater activity, the more the surplus honey; and, really, does it not all rest with the bee-keeper by placing supers on hives just the moment honey begins to come in in earnest, and then giving a second and even a third super at the right time, also giving, as nearly as possible, the proper temperature by deep or shallow entrance as occasion demands? This season has been so cool for this locality I can not say I like shade-trees for bees, for I am convinced my bees would have done better this year (especially by building up faster in spring) had they been more in the sun; but in a warm summer I should prefer them in the shade.

Millard, Wis. W. T. Sherman.

[Last season, in most localities, was too poor to prove very much either way; but in talking with Miss Emma Wilson, Dr. Miller's sister-in-law, she stated that the bees clustered out more with narrow entrances than with wide ones; that they contracted at one time the entrances to part of their colonies, and the result was that the bees began to cluster out in front of those colonies.

It is true that bees will hang on the frames where a deep entrance is used, to some extent; but whenever they are in front of the hive they obstruct the entrance, and interfere with the proper ripening of the honey. At various times at Dr. Miller's, Vernon Burt's, and at our own yards I have watched these wide entrances, and, as a general rule, I have found that bees coming in from the field take a nice easy gentle curve, go through the entrance on the wing, and alight on the bees hanging below. A honey-laden bee dislikes to land on a hard board; and it will invariably, if given the opportunity, alight on a cushion of bees. So far as this is concerned it would not argue for wide or narrow entrances, any more than that, in the case of the former, the field-bee *saves time* by getting to the bottom of the cluster itself, with one quick easy upward swoop without being obliged to crawl through a small entrance obstructed by bees, and then *crawl* several inches on the bottom-board.—Ed.]

BEE-SPACE IN COMB-HONEY CASES $\frac{3}{16}$ AND NOT ¼ INCH, EVEN WITH ITALIANS.

I have just concluded reading A. E. Coonrod's article on page 622 and your comments on same, in which he says that he "found the bee-space used by large colonies in the height of the honey season to be scant $\frac{3}{16}$ inch, and by the smaller colonies to be a little over $\frac{3}{16}$, or about $\frac{7}{32}$ inch; but on the average they are $\frac{3}{16}$." His bees are pure blacks.

Now you can just put it down as substantially correct that the above measurements apply to pure Italians as well as to blacks. I made very careful and accurate measurements 12 years ago. I had then a very fine crop of white-clover honey, produced, of course, in bee-way sections, between wooden separators, by pure Italian bees. My reasons for measuring was that I carried myself with the idea of constructing an improved section case. My method was to take a small stick of pine wood about ⅜ inch square, and whittle one side of it down, little by little, until I could just pass it down between the separator and cappings. I whittled several sticks, and measured spaces in quite a number of cases, and the result of the measure was always $\frac{3}{16}$ of an inch for well-crowded cases, and a little more where the bees had more room.

If your measurements gave a space of ¼ inch, I surmise that the bees had either too much room or the honey-flow was not heavy enough to let the bees use all available space. At any rate, I do not believe it was because you used Italians.

Of course, there will always be sections the bee-space of which will be nearer ¼ than $\frac{3}{16}$ inch. The last case which the bees finish off as the honey-flow becomes slower and slower, and finally ceases, will contain such; but the only true measurement can be taken from sections which have been filled under the most favorable conditions, have been crowded full, and you will find, I think, that, no matter where produced, or whether produced by Italians, hybrids, or blacks, the average bee-space is $\frac{3}{16}$ of an inch. T. H. Kloer.

Terre Haute, Ind., Aug. 19.

[I am a little surprised at your figures. We have had, I think, scores of reports showing that the production of comb honey in plain sections has in almost every case been attended with most gratifying results. We assumed last season, when we gauged the thickness of the cleats on the fences, that the average bee-space was $\frac{3}{12}$ inch. We therefore made our cleats $\frac{2}{12}$ thick, or two-thirds as thick as the bee-space. This would leave $\frac{1}{12}$ inch depression in the face of the comb, from a line or straight edge across the edges of the section. Now, then, if $\frac{3}{16}$ inch were the correct bee-space, with both Italians and blacks, the surface of the comb would come very nearly flush with the edges of the sections. Reducing $\frac{3}{16}$ and $\frac{2}{12}$ to a decimal the figures would stand .187 and .166 respectively. This would bring the face of the comb to within .029 of the straight edge. Now, then, if the bee-space in some cases were less than $\frac{3}{16}$ the comb would come even with the edge of the section, and thus be entirely uncratable. We know of one or two cases where the fence did not seem to accomplish the result desired; but we have, since then, ascertained that the trouble was because the fence in question was not properly constructed.

I have been over dozens of different lots of honey produced in as many different localities; and with scarcely an exception the bee-space seems to favor ¼ inch. Your own measurement, in your own locality, would hardly be a correct basis for average localities throughout the United States.

But this is a very important matter, and we earnestly desire reports from bee-keepers everywhere; for upon its correct solution will rest the matter of the thickness of the cross-cleats on fences. *If* $\frac{3}{16}$ is the correct bee-space, then the cleats on the fence would have to be thinner, of course, than $\frac{2}{12}$. See? As manufacturers of bee-keepers' supplies we should regard it a as favor if our readers help us in gathering statistics on this very important matter.—ED.]

REPORTS ON PLAIN SECTIONS.

Mr. Francis Danzenbaker, Washington, D. C.: On p. 630 of GLEANINGS, Aug. 15, you ask for reports on plain sections. I used 10 hives with plain Danzy sections, 4 x 5 x 1⅜, and 20 hives with old-style Danzy, open top and bottom. In five of the first mentioned, triangular starters were used; in the other five, full sheets of foundation. Only starters were used in the 20 hives with old-style Danzy sections. The season here has been fair, the 30 colonies averaging about 50 lbs. to the colony, the largest yield from one colony being 128 complete sections, 32 of which were plain, and 96 old-style Danzy; the smallest from one colony, 17 lbs., old-style Danzy sections. The results from the ten hives, so far as the finished product is concerned, is about the same. I put sections together (as they came off the hives) that had starters and full sheets, and could see no difference; but when I ate the honey I preferred those with starters only.

I found one very important thing—the outside rows of these plain sections were as well filled and capped as those in the middle, while this was not so with the others in any instance.

Another item in favor of the plain: There was less propolis. In fact, in a *majority* of the cases I put them right into the shipping-crates without any scraping at all. I have had no trouble with *bulged* combs. They were all filled out nicely to the edge, and crated up all right in cases, with or without separators. By the way, I think separators a great improvement, and I shall use them in all my cases another season.

I used some old-style 4¼x4¼ sections this season, but obtained very little honey from them. I am satisfied that the ten-frame Dovetail hives and Danzy sections, plain, and open top and bottom, have increased my comb honey 50 per cent or more. I did not test any of your Ideal sections this season; but from my experience with the plain Danzy sections, I am sure they are superior to the old style.

I shall use plain sections and fence on a majority of my hives another season, but in the Danzy supers. I have never seen any thing else in the way of a super that I like as well as the Danzy. I have had but little experience with the Danzy body.

Those twelve-framers you made for me three years ago are all right. I have used six of them double story, 24 frames, for extracting. Only one has swarmed in three years. The average per hive this season was 135 lbs. We have now a fine prospect for a heavy fall flow.

Bristol, Tenn., Aug. 22. M. D. ANDES.

PLAIN SECTIONS VERY SATISFACTORY.

Mr. Editor:—I will give you the result of the season's experience with the fence separator. I have used them with plain sections, also with the ordinary seven-to-foot sections. Used with the plain sections the results were very satisfactory indeed. Sections were filled better and quicker than with the plain separator, and look more neat and tasty. Used with the seven-to-foot, results were still better. I placed the section in such a way that the plain edges would be at top and bottom, and the insets at the sides, thus allowing free communication in every direction. I found that, when arranged in this way, the bees worked nearly as well, and stored honey almost as rapidly as they did in the extracting-supers. In fact, colonies in which sections were arranged in supers, as per the preceding, stored from 24 to 50 pounds more comb honey than did those in which the ordinary arrangement was preserved.

I think making the fences in such a way as to exclude the queen from the super would be an excellent improvement. S. A. CRAIG.

Battle Creek, Mich., Sept. 16.

PLAIN SECTIONS AND FENCES A SUCCESS.

The hives with the plain sections and fences and plain section-holders are "simply immense." I got 360 well-filled plain sections of honey, 4¼x4¼x1½, from the six hives, not spring count. All new swarms. The S. fences with the old slotted section-holder, the sections I used with the S. fences, are not filled out quite so full; but they are as full as the bee-way sections without separators I used on them last year. I have tried both eight and ten frame hives, but the eight-frame is the size for this locality. The section-holder is all right for me. EDWARD WILSON.

Whittemore, Mich.

HONEY IN PLAIN SECTIONS A GOOD SELLER.

I must say I had occasion to feel grateful yesterday, as I was peddling my first crop of honey, that I had learned so much about the business from GLEANINGS. I started from home about three o'clock P. M. with 68 lbs., 20 of which was 4x5 plain, which I got of you, and was as nice honey as I ever saw. I got 14 cents for it. Well, when I returned at evening I had $7.69 for my trip. I might say that one case of 24 sections was my poorest, and I got 10 cts. for it. I took 48 lbs. from each of three colonies. I had but 5 in spring, and had two swarms. N. O. JARVIS.

Kenwood, N. Y., Aug. 8.

PLAIN SECTIONS ALL RIGHT, BUT SHORT IN WEIGHT.

We are getting the best crop of honey in quality and quantity that we have had for several years. The 4¼x4¼x1½ plain sections do not hold out in weight; they run about 14 ounces, where the 3⅝x5 do a little better—about 15 ounces. Otherwise I am well pleased with the plain sections. It takes 16 ounces for a pound here in Aroostook.

Caribou, Maine, Aug. 8. L. E. TUTTLE.

HONEY-THIEVES; BRINGING THEM TO JUSTICE.

I had some of my honey stolen last winter Three hives were destroyed Dec. 4th; but I set the deputy sheriff at it, and he got track of it by the wires that were in the honey. We procured a search-warrant and sifted the ashes, and found wires where the brood-frames had been burned. The thieves pleaded guilty, and were sent to the workhouse for 90 days—a light sentence, but all the justice said he had power to give. Benj. Passage.

Stark, Mich.

THE FARMER BEE-KEEPER AND HIGH PRICES.

It is not the farmer bee-keepers who cut the price here, but it is the big honey-men who ship honey to our large cities, and then our grocer will coolly tell us he can get honey for 12 or 15 cents a box. If selling honey for a high price entitles one to have his picture in the bee-journals, then surely we would "take the cake," for we retail at 20 and wholesale at 16⅔. But we don't want our picture put there. J. T. Shedd.

New Braintree, Mass., July 21.

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SEALING JELLY-GLASSES.

In putting covers on jelly-glasses last year, some of which did not fit perfectly tight, we dipped a small brush in melted beeswax, waxed the edge of the glass, and put the cover on at once. This makes it perfectly air-tight. I do not know whether this is generally known. J. W. Bannehr.

Braidentown, Fla.

REPORTS DISCOURAGING

POOREST HONEY SEASON.

This has been one of the poorest honey seasons ever known in Butler Co. Bees made some section honey the first part of the season, but it was of such a quality that it was not fit to eat. Bees are busy now on buckwheat, which seems to be full of honey, but it will keep them busy to fill up below for winter. The supplies I bought of you are all right every way, and give my customers the best of satisfaction. I shall buy all my supplies of you another season. J. A. McGowan.

Prospect, Pa., Aug. 26.

Honey season closed a month or more ago. Crop very light in quantity; very dark in color, and poor in quality in this section. Bees are rather short of stores, but we have always had a sufficient flow from fall flowers, asters, etc., to give supplies for winter, and hope for the same this season. Last year 8 colonies, spring count, gave 400 lbs. comb honey; 50 extracted; this season, 9 colonies, spring count, in good condition, about 50 lbs. comb. H. P. Joslin.

Ben Avon, Pa., Aug. 25.

I have 78 hives of bees, but I shall not harvest 300 lbs. of comb honey. It is the worst year in ten. The failure is widespread in this section this year. R. A. Whitfield.

Westville, Miss., Sept. 2.

REPORTS ENCOURAGING

A GOOD HONEY-FLOW IN FLORIDA.

Following my annual custom for many years past, I herewith send an approximate report of the honey crop of this section of Florida. I had been counting our crop as a rather poor one until I saw Query No. 81 in the *Am. Bee Journal*, and from the replies to it learned that I have secured over 2⅔ times the average for the past 25 years, of the 21 reporters from all over the country who replied as to extracted honey. Leaving out one report from California, one from Canada, and one from Florida, it is almost exactly three times the average; so I have concluded to be satisfied, even if my crop of 148 lbs., with plenty left in the hive for winter, does look small beside one of 353 lbs., and individual yields of 550 to 600 lbs. still fresh in my memory. Nor do I forget that last season showed the one total failure that I have ever known here.

The season opened up with bees in poor condition, as a rule, and some feeding had to be done to prevent starvation. I fed about 1000 lbs. of honey to stimulate the queens and ward off famine in the hives. Outside of mangrove, which is but slowly recovering from the effects of the great freezes of three years ago, and for the second time in my experience gave almost no honey in the bloom that it did have, the honey prospects seemed good. A little later we began to suffer from the most severe drouth I have ever known here, and the woods were burned over until it seemed as though nothing but cabbage-palmetto (like mangrove, not subject to injury by fire, drouth, or flood) could be looked to for a crop. The amount of the saw-palmetto crop was, therefore, a happy surprise to us, and the cabbage-palmetto gave its average yield. The extreme dryness of the air all the season has caused our honey to be of extra heavy body and fine quality. It was never better. The general average in this vicinity is a little below my own, and the number of colonies kept is greatly reduced since the freezes and foul brood hit us, so the aggregate is far below what it used to be during the decade ending with 1894. The promise for a fall crop of surplus is unusually good at this time. Foul brood has been thoroughly stamped out, so with a few favorable seasons we may hope soon to get back to our old figures again. Some of the bee-keepers are holding their crop for higher prices, expected later in the season, but are filling the orders that come to them from northern apiarists, at present rates.

Hawks Park, Fla., Sept. 3. W. S. Hart.

T. J. C., Ill.—The best way to exterminate weeds or grass is to apply a sprinkling of salt around the place where you wish it killed out. It does not usually pay to try to kill out the grass and weeds except in front of the entrance to the hives.

EDITORIAL
BY E. R. ROOT

HAND-HOLES OR CLEATS.

WHILE at Dr. Miller's last week I could not help noting how much easier it was to lift hives having cleats for handles than those having hand-holes only. Dr. Miller has been a strong advocate of cleats; and after trying the two forms—the cleats and hand-holes—I am afraid I shall have to acknowledge that the former is better, although I have always talked the other way, because the hand-hole looked neater, and did not stick out in the way. I do not know, but I think we can devise a combination of cleat and hand-hole that will be both neat in appearance, and yet give a good firm grip on the hive. We are at work on different models now.

BROKEN COMB HONEY IN TUMBLERS.

DURING one of the discussions at Omaha, the practice of putting up broken comb honey in tumblers by bee-keepers was most severely condemned, for the reason that glucose-mixers put a little chunk of comb honey into a tumbler of glucose, and then labeled it "Pure Honey." This latter, going out into the markets, disgusted consumers, and they naturally think that, if honey tastes that way, they want no more of it. It was urged that some good bee-keepers practiced putting up broken comb honey in tumblers. But that made no difference. They should be severely scored by the bee-keepers. They could put up their broken comb honey in tin pails; but even then it was urged that they sell it around home. I think myself that no bee-keeper should put up his broken comb honey in tumblers, for the very reason that such a package is at once suggestive of glucose.

APICULTURAL EXHIBITS AT THE OMAHA EXPOSITION.

THE apicultural display at Omaha was the largest and finest of any thing that had heretofore been given anywhere, not even excepting the World's Fair. The building itself, 75x138, devoted exclusively to apiculture, was hardly adequately represented by the illustration that I gave on page 628. If there was any industry that received proper recognition at Omaha, in proportion to its size, it was that of apiculture; and I have no doubt the credit for all this is due largely to the untiring efforts of Messrs. Abbott, Stilson, and Whitcomb—especially the latter. These men are born fighters; and when they ask for something they ask for large things. It seems they were turned down the first time or two, but the requests were pressed, almost to the nature of a demand, and finally our friends were rewarded.

The supply manufacturers' displays were all good, and the general arrangement of the honey exhibits excellent. In marked contrast with the exhibits at the World's Fair, there was a pleasing variety. It will be remembered that, at the Chicago apicultural show, every thing was confined to show-cases of a certain size prescribed by the exhibition managers. This had the effect of giving a sameness to all the displays of honey. I hope in our next issue to show you half-tones of one or two of the exhibits.

WHY HONEY DISAGREES WITH SOME PEOPLE.

AT the Omaha convention, a great deal of discussion grew out of the fact that honey makes some people sick. Some thought it due to the presence of bee-sting poison. Instances were cited to show that honey from bee-trees made the bee-hunter sick, because, it was argued, the bees, being angered, spill their poison over the face of the honey, and therefore render it unfit to eat. But the majority of the convention dissented from this view, taking the ground that a large amount of honey, such as a hungry bee-hunter is apt to indulge in, is likely to make him sick, especially if he is not used to eating honey. Our systems become accustomed to certain foods; and a certain large dose of any strange food is liable to cause trouble. Those who use honey largely, experience no ill effect, but, on the contrary, a decided benefit.

HONEY FROM CALIFORNIA TAINTED WITH FOUL BROOD.

A PROMINENT bee-keeper in California writes, "Be careful as to whom you buy honey from. Much honey from foul-broody apiaries is sold, and consumers are careless by exposing drips from cans and sections, only to spread the disease. *I know this from observation.*"

It might seem to some, perhaps, and especially to Californians, that such a fact should not be published in a bee-journal, as it might have a tendency to hurt the sale of California honey. As nearly all the buyers are commission men or honey-dealers who do not take or read bee-journals, I don't see that it will do any harm. But bee-keepers do buy from each other; and this warning may be just timely enough to prevent the spread of that fearful disease in some localities that are now entirely free, even in California. In the mean time the bee-keepers of that State should, in conventions, see what can be done against such inexcusable carelessness; and if there is no law to prevent such work, let there be one enacted as soon as possible. We might as well face the fact that foul brood is spreading in certain localities in the United States. Concealing it would do vastly more harm than good. However, if GLEANINGS is wrong in this position it will cheerfully retract.

QUALITY OF SWEET-CLOVER HONEY.

AT one of the earlier sessions of the Omaha convention quite a discussion arose over the quality of sweet-clover honey. Some thought it rank and unpleasant; others, especially those in the vicinity where it is produced, pronounced it the finest honey in the world.

It seemed almost impossible to reconcile these differences of opinion until the fact leaked out that sweet-clover honey must be thoroughly ripened before its delightful flavor would be brought out; that green sweet-clover honey has a sort of bitter taste, which disappears upon thorough ripening, as just stated. The honey that Mr. York, editor of the *American Bee Journal*, produced, has been pronounced as being of very fine quality, and he was of the opinion that it was largely sweet-clover. When I first tasted some of his honey a couple of years ago, I remember I thought it had the most delightful flavor of any thing I had ever tried; but at that time neither Mr. York nor myself knew its source; but on my last visit he was quite certain that it was from sweet clover. That same delightful minty taste was present. At the convention some thought that sweet-clover honey was a little better when mixed with something else. Perhaps this is true, for Mr. York's honey, besides the sweet clover, has evidently a mixtnre of other flora that abounds in his vicinity at Englewood.

DR. MILLER'S SALT-PETER RAGS FOR LIGHTING SMOKERS.

WHILE visiting at Dr. Miller's I saw him pull out a piece of rag from his tool-basket, light it with a match, or apparently attempt to light it, and put it down the smoker. There was no flame, and it seemed the rag had gone out.

"Here, that's gone out!" I exclaimed.

"Oh! that's all right," replied the doctor; "it will go;" and then he proceeded to cram in some planer shsvings.

"You will put it out now, I am sure," said I.

"I think not," he replied; and at this he began working the bellows, when it immediately began to send out quite a volume of smoke.

"The rags in our locality do not burn that way," I remarked.

"Pehaps not," returned the doctor; "but we dip ours in saltpeter water, and then dry them. See? Just the moment the flame of a match touches the rag it will catch fire, and stay lighted."

Dr. Miller formerly soaked his rotten wood in saltpeter water, and then after it was dry used it for lighting his smoker. But the rag lghts instantly, and is then pushed into the smoker. No crammiug-in of other fuel will put it out. This saves much annoyance in lighting the smoker.

THE CRITIC CRITICISED.

IT has seemed to me that the critic of the *Review* has rather departed from the legitimate field of work assigned to him by the editor of that paper. I was under the impression that he was to criticise the theories and practices of bee-keepers in the line of their favorite pursuit; but a large part of his criticisms have been devoted, not to the supposed fallacies and fads in apiculture, but to the literary infelicities in the writings of Dr. Miller, Editor York, and myself. Indeed, we three have been almost the only ones who have claimed the critic's attention.

I have tried to console myself with the thought that I was in good company, or that *our* writings were more important than the writings of those ignored; but the critic somewhat upsets this by saying that, when he goes blackberrying, he picks where the berries are thickest.

Mr. Taylor generously admits that he lives in a glass house, and that "even Homer nods, and that Addison himself, a noted pattern in style, makes many slips." He enters a strong plea for pure, perfect language, and concludes by saying, "Beautiful typography is a treat: pure choice language is a feast." To all of this I give my most hearty assent; but "pure, choice language," however much it may be admired, is not a gift possessed by all, and I fear not by my poor self. I am not editing a literary journal, but just a bee-paper that strives to give ideas about bees, in plain English, without embellishment. I know I have made some "slips," and am always thankful to have my attention called to them. I appreciate it more if they are pointed out privately, and I believe I am profited quite as much.

But Mr. Taylor seems to be very thankful for the public mention of two grammatical errors of his, and adds that "helpful criticism is more than meat and drink" to him. While I think such things have no place in a bee-journal I can not refrain from referring to two more since he thrives on that sort of diet.

In the very article where he speaks so feelingly of "pure, choice language" being a "feast," he says, "I *would* be pleased" for "I *should* be pleased," and uses a superlative form of adverb* for the comparative in referring to two classes of colonies. I have not had time to examine critically his other articles for "slips;" but "W. P.," our proof-reader, says there are a few "nods" in these also.

I do not know what dictionary Mr. Taylor takes as his authority; but if he had used Webster's International or Funk & Wagnalls' Standard, authorities recognized by scholars everywhere, he would not question the use of the word "boil" as a noun in the phrase "bring it to a boil," nor would the crimson fluid from his sympathetic heart have suffused his cheeks when he says, "I am afraid a blush covered my face when, in the account of Mr. Cowan's visit, where that cultivated Englishman would be sure to see it, I found the word 'canine' used for dog or puppy." If Mr. Taylor will turn to the Standard Dictionary he will find canine as a noun, and meaning dog in just the sense I used it. The joke is on Mr. Taylor, and Mr. Cowan has the laugh. In the same manner he questions the use of some other words concerning which there is a difference of opinion among authorities; but there is no use in discussing them here.

No wonder Editor Hutchinson raised the question whether Mr. Taylor were hypercritical or not. He who sits in judgment over his fellows should not forget that there may be differences of opinion in the use of language. There is a poetic license, and there is also a license in the use of prose. A limited use of new words may not be in bad taste. Some of the very words that the critic classes as slang, the Standard Dictionary recognizes as colloquialisms. That being the case, the journals have not been as "slangy" as Mr. T. appears to think.

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*Earliest for earlier.

I bear no ill feeling toward Mr. Taylor, and I am sure he in turn entertains none toward me, for I take it that he likes straightforward, open expressions of opinion, even if it does strike back. If this little discussion shall result in cleaner diction for all the bee-journals, we shall have Mr. Taylor to thank; but we shall not forget that he has been hypercritical and hardly up to the latest authorities.

I greatly enjoy Mr. Taylor's criticisms when confined to the theories and practices of his brother bee-keepers; and, barring the fact that I think he is not quite fair in quoting those with whom he differs in opinion, I think his criticisms will be productive of good rather than otherwise. Yes, I enjoy having him come right out square against my advocacy of two-story hives; but in doing so he should not take me to task for opinions that I do not hold.

On page 282, regarding the disposition of large or small colonies to swarm, Mr. Taylor evidently does not understand my position. It appears that his bias (unconscious, no doubt) is so strong that he fails to see my idea. In a nutshell it is this: A large colony in a large hive swarms less than a moderate-sized colony (say eight-frame) in a moderate-sized hive. Mr. Taylor uses, or did use, eight-frame hives. Of course, a large colony in such a hive, if given but one brood-nest, would be likely to swarm before one of smaller size. Right here I would agree with him.

On the same page, referring to what I wrote on page 630 of GLEANINGS, he says I still fail to answer his question given on page 243 of the *Review*. Well, I'll try again. I was referring to my practice with strong and medium-strong colonies, which is this: If the former are very strong, I let them have the two stories clear through the season; and if the others (medium strong) are not strong enough I remove the upper stories from them, and put in their places supers with sections. Mr. Taylor did not understand, and then asked: "Is he comparing those very strong colonies that he allows two stories with those of medium strength that he contracts to one story? If so we are very close together." Yes, that is just what I was doing.

A GENERAL VIEW OF THE OMAHA CONVENTION.

THE Omaha convention has now gone into history. While the attendance was considerably below what we had every reason to expect, from the low railroad rates offered, yet the prominence and representative character of those who did attend, and the quality of the discussion, more than made up for the numerical deficiency. A marked feature was the entire absence of any thing in the line of personal grievances or strife. Indeed, I did not notice an unpleasant fling thrown out at any one in any of the discussions. Of course, there was the usual good-natured bantering from such men as Dr. Miller, Dr. Mason, Hon. E. Whitcomb, and L. Stilson. If at any time the discussion began to drag, one of the quartet was almost sure to throw in a bomb-shell (joke) that would wake every one up. No convention would be complete without one or more of these fun-makers.

The weather was delightful, the convention hall commodious and comfortable. We were right royally welcomed, not only by the Nebraska bee-keepers, but by ex-Governor Saunders, who honored the association by his presence.

Much valuable work was done by the convention, especially with reference to tackling this great question of adulteration. An interesting report by General Manager Secor, of the United States Bee-keepers' Union, showed that some very good work had been done in the line of pure food, and in defending bee-keepers in their rights. Considerable discussion followed the reading of this paper, resulting in the recommendation that the Union begin securing evidence against the mixers, and place such evidence before the proper authorities, whose business it is to assume costs of suits.

At a subsequent meeting of the Board of Directors it was proposed to begin work in whatever field would yield the best results in the judgment of the General Manager.

The last session of the convention was held in Apicultural Building on the exposition grounds. It was largely attended, and, after some impromptu speech-making by one of the officials of the exposition, in the form of a welcome to the bee-keepers, and responses from Mr. Abbott and Dr. C. C. Miller, we were treated to a feast of melons furnished by one of the exhibitors of honey, himself also a melon-grower. After a vote of thanks the convention adjourned to meet at the call of the Executive Committee.

A competent court stenographer was engaged to take down the whole proceedings of the convention, and very fortunately this stenographer was also a bee-keeper; so it is fair to assume that there will be an accurate report of all the proceedings. These will be given in the *Am. Bee Journal*. GLEANINGS will give only a condensed report, as usual, and this report will be in the nature of editorial snap-shots given from time to time.

THE OMAHA EXPOSITION.

This is really worth going to see. While not as large, of course, as the World's Fair, yet what there is of it is fully its equal, except, perhaps, in the mechanical department. In the line of agriculture it surpasses the exhibit (perhaps not in size) at the World's Fair. The buildings arranged around the beautiful lagoon present a view either night or day that equals any single view at the great Chicago show.

NOTES OF TRAVEL

BY A. I. ROOT.

STARTING OUT FROM WILLOW CAMP.

Of course I was up bright and early next morning, and I believe I was the first one at the breakfast-table; and as it was a good deal less trouble to spring on to my wheel than to get a great coach loaded up, I was out exploring considerably in advance of the rest of the party. Not far from the camp the road wound close to the base of Obsidian Cliff. This is a mountain of rocks, but the rocks are what I should call black glass. In the morning there was nothing particularly remarkable about them — that is, so far as the appearance at a distance was concerned; but on my return trip, when the western sun struck the face of the cliff right over my head, then it glistened like a thousand mirors. The glass is opaque, and jet black, although there are occasional streaks of other colors. In order to make a roadway along the base they built great fires against the huge glass, and then broke it into fragments by dashing water upon it. The road is, therefore, made of pulverized glass, and it is said to be the only one of the kind in the world. The pieces looked so sharp and flinty that I got off and walked. I was afraid for my rubber tires, and then I wanted to examine it more critically. You may wonder where the roadmakers got the fuel to heat the glass. Why, bless your heart, the greater part of Yellowstone Park is just covered with dead pine-trees. In fact, many of the forests are so filled up with pine and spruce trunks that never rot — or at least do not for a long while — that a horse can hardly be ridden through them; and these pine trunks will furnish fuel for years to come for campers and everybody else. We are told that the Indians for ages past got their material for flint arrowheads from these obsidian cliffs, and chips of this very rock are found around their camping-places for miles in every direction.

CRATER OF THE MONARCH.

Beaver Lake is on the opposite side of the roadway from the cliffs. As Uncle Sam forbids meddling, not only with the ducks and geese, but beavers too, the latter are there at work building their dams and houses, unmolested, just as they did before our forefathers disturbed them in their rural industry of building houses and doing the plastering with their trowel-like tails. It seems funny to pass ducks and geese that do not fly away, even when you go up near enough to reach them with a fish-pole.

A little further on is Roaring Mountain, so called because of the steam that issues with a roaring sound from its summit. This was the first glimpse we had of steam under pressure. A little further along we came to the "Devil's Frying-pan." The steam here comes out in a great number of little fissures over perhaps a quarter of an acre of ground. As you stand in the midst of it the hissing and sputtering are for all the world like frying meat — hence the name — Frying-pan. After these frying-pans there were so many wonderful things to see that I hope you will excuse me if I do get things a little mixed up in regard to locality.

The first sight of any thing that really looked like a geyser was a big boiling spring by the side of the road. This spring boils up, I should say, about as high as one's head — sometimes higher, and sometimes lower. It looks just like water boiling in a kettle, only the color is a beautiful indigo blue, clear as crystal, but as blue as the sky after a thunder-shower. I said at the time that this spring itself was worth a whole visit to the park; and I think I could have walked around and watched it play for hours, without being tired. I notice by the guide book that this Congress Spring, as it is called, throws the water, during occasional demonstrations, from fifteen to twenty feet high; so you see I have not exaggerated at all.

Before going further, candor compels me to state that I left my wheel at Norris. This is a point where we begin to go around a loop, striking the same place on our return two or three days later. There were several reasons why I reluctantly left my wheel, but the principal one was because my wind did not seem to hold out when I got about 7000 feet above sea-level; and I rather think that imbibing so much Apollinaris water was not favorable to the development of muscular strength. There is another little circumstance I might mention. The carriage containing the friends who camped with us the evening before overhauled me, and urged me to occupy the vacant seat and go along with them. There were some very bright, entertaining *ladies* in the crowd, and they *too* intimated my presence would be agreeeble, and—why, you see when one sees these wonderful things all alone by himself he wants somebody to talk to. Well, you will have to picture me for the next three or four days in company with a crowd of nice people, and having a very good time.

A little further on we came to the first real geyser, called Constant. This little geyser goes off every minute, throwing jets of water forty feet into the air. As most of the water runs right back into the crater, where it came out, very little runs away. The Black Growler, a little further on, claimed my attention to such an extent that our party got clear out of sight. This geyser throws but very little water — just enough, in fact, to lay the dust nicely in the road that runs close to it; but it throws out two jets of steam with such a roar that you can not hear anybody talk. It comes with puffs and brief explosions that make it all the more frightful. A little to the north of it is one called Hurricane; and those two together are enough to scare anybody, let alone the horses to the coach; but they seem to have become accustomed to it by their weekly trips close to the puffing steam. There is steam enough here to run a good-sized engine, without any trouble. The way it threw up a stick I laid across the crater would look as if there were pressure enough. Emerald Pool is a handsome emerald-tinted spring, 40x50 feet in size. Its walls are ornamented with beautiful sulphur-colored coral. The Monarch Geyser, of which I give a cut on the preceding page, is the largest in Norris Basin.

Nobody can tell when the Monarch will "go off," for it is anywhere from three or four to twelve hours. The crater consists of two oval-shaped wells. When it is quiet you can look down and see the steam coming up for perhaps a distance of fifty feet down. It plays with a series of explosions. I will tell you how I know. I ventured nearer than any of the rest of the party, and was peering down into its awful depths. Several of the party called out to me, saying I had better look out. I thought I heard an unusual disturbance down there, and wanted to see how it commenced. The driver said we might have to wait all day, and guessed we had better go on. I was standing right where that person is, of whom you can just get a glimpse through the steam. Before I had really got to a safe distance I heard a tremendous noise, and the water came flying out about as quick as if somebody had touched off a cannon down in the bottom of the well. Before the first charge had got well started, off went another, sending a volley of clouds of boiling water something like 100 feet high. There were great quantities of drops of water shining in the sun, like drops of rain; but as these are boiling hot they go up and up until they turn into steam, and so do not come down at all. But chunks of water, if I may use the term, go up that do come down.

JUPITER TERRACE, MAMMOTH HOT SPRINGS.

A little further we get our first glimpse of the Paint Pots. In these the mud is mixed up with the boiling water; and it is about the smoothest and most plastic mud you ever saw or heard of. Somebody said it was no wonder it was nice mortar, for Nature had been working it over and over for perhaps — how long do you suppose? Why, perhaps ten thousand years. Each puff of steam throws up a thick mud that settles back in the form of a ring. Then another one follows, and you have something like a full-blown rose. It may be the color of a rose, or it may be green or blue, or white as whitewash. Some of the mud geysers make a figure every now and then that is strikingly like a calla lily. You see, if the bubble of steam shoots off at an angle, instead of going straight up, we have a blossom with a point at one side like the calla lily; and this remains until another bubble of steam makes another blossom of some kind. Sometimes it is a very pretty morning-glory, color and all.

You had better confine your meanderings to where you see people have been walking. If you do not, you may get into mud that is more objectionable than any thing you ever had any experience with before. At various points through the canyon we meet with these "paint pots," or mud springs; but the description I have given will answer for most of them.

One of the most appalling sights in the way of geysers or hot springs is Excelsior Geyser. It is a great well, or abyss, something like 300 feet long and 200 feet wide. The water is of a deep blue, boiling all the time. The surface is 15 or 20 feet below the ground; and the walls, almost clear around it, are perpendicular or hollowed out under the edge, so it seems likely the brink may at any time break off and fall in. This great geyser is so full of steam that a good deal of the time you can not get a glimpse of the surface of the water. Once in a while, however, the wind blows the steam off to one side. Somebody cautioned me, as I was walking pretty close to the edge of this frightful chasm. As the ground looked hard and firm, however, I did not feel much troubled about it until the wind blew the steam away, and I looked back to where I had just been standing, and saw the earth had been washed out underneath, like a cave; and the soil looked so loose and sandy under that apparently firm ground that it seems as if one's weight might cause it to crumble off. Suppose a crowd of people should go up to the brink, and be precipitated into this terrible lake of boiling, steaming water. This place has been known as Hell's Half Acre; and it seemed to me as though the government ought to put up a fence around this dangerous place, with notice to visitors to beware. We are told this has, in times past, been subject to eruptions where a great column of water toward fifty or more feet across has been hurled hundreds of feet high. Turquoise Spring is a silent pool about 100 feet in diameter. It is so named on account of the exquisite color of the water, and the brilliant hues of the sides and bottom which are so plainly visible. Prismatic Lake is said to be the largest of the brilliant springs, being from 300 to 400 feet in diameter. In the center the water seems to be blue, turning to green toward the margin, while some other portions of it seem to be yellow. I presume this is caused somewhat by the distance or depth of the water through which you look. In addition to this the sides and bottom are shaded with most tantalizing colors. May be "tantalizing" is not exactly the word, but it conveys the meaning better than any other word I know. The clouds of steam hinder one from getting a full glimpse of its wonderful beauty, unless you get the sun at just the right angle, and wait quite a time for the steam to be wafted away.

MUSHROOM SPRING, FOUNTAIN BASIN.

Since writing my description of the terraces at Mammoth Springs, in our last issue, I have secured a cut (see preceding page) that in many respects is quite an improvement over the one on page 699 of last issue. It shows very plainly the way in which the walls around these separate pools are filled up by the mineral deposit. The spring probably bursts out very near the foot of the hills in the background; then as the water overflows each pool in succession it forms the beautiful scalloped-edge basin. Most of this formation is hard enough so you can walk around by stepping on the edges of the basin. Be careful, however, that you do not slip off into the boiling water. Steam is constantly ascending from most of these pools, and sometimes it obstructs the view; but when a gentle breeze wafts away the vapor, and permits the sunshine to go away down into its shining depths of crystal water, you have a glimpse that is wonderfully entrancing. While many of the springs are bubbling and boiling, there are others that are so quiet one can hardly believe the surface is not a beautifully polished mirror. I give you a glimpse of one of these quiet springs. See cut above. Now, this picture does not give you a glimpse of the depth and expanse away down under the surface. Oftentimes beautiful caverns with coral-like pillars open out away off under ground.

HOW THE PEOPLE OF NEW JERSEY THREW OFF THE SHACKLES, AND GOT THE UPPER HAND OF THE GAMBLERS AND WHISKY-MEN.

In our issue for Feb. 1st, p. 104, I told something about what the Law and Order League of Connecticut had succeeded in doing. At a recent temperance meeting in our town, Rev. J. C. Jackson, one of the lecturers of the Anti-saloon League, gave an account of a similar work in New Jersey. I was so much pleased with it I asked him to give a brief outline of that part of his talk. He has done so, and I submit it below, hoping these illustrations may be an encouragement for other States where the good people are being snowed under by outlaws and criminals.

The case of the deliverance of New Jersey from corrupt political rule is full of encouragement for all those who are working in the cause of civic righteousness. I refer to the popular uprising against the ring of gamblers, ballot-box stuffers, and political corruptionists who were overthrown there a few years ago. For twenty-five years this ring had practically (politically speaking) owned New Jersey.

By stringent legislation New York had forced the great majority of its race-track gamblers to emigrate across the Hudson. The crusade against the Louisiana Lottery had also resulted in many of the corrupt creatures who had been connected with that and kindred enterprises transferring their activities to Jersey City. The chief "greengoods" operators of the United States generally made their headquarters at Taylor's Hotel, a few numbers up Montgomery Street from the Jersey City Ferry. These forces of evil, I say, practically ruled the State. They elected legislatures who did their bidding; and if it was necessary to manufacture a fraudulent majority, it was furnished by armed bands of thugs and repeaters from New York who made the rounds of the polling-places in Elizabeth, Paterson, and Jersey City toward evening on election days. There were polling-places where no decent citizen dared show himself on election days after 4 o'clock. The ring controlled the railroad influence in legislation. The race-track managers and gamblers had set up their establishments at Guttenburg, Clifton, Linden, and at the great national race-course at Monmouth, and, through the enormous crowds attracted to the races, were able to secure the favor of the railroad companies.

There were just two things in New Jersey the gamblers did not own. They did not own that grand incorruptible judiciary which has made "Jersey justice" a synonym for stern, unflinching integrity, throughout the Union. And they did not own the great masses of the honest common people of the State, whose hearts were true to righteousness. After our people had groaned under this tyranny for a quarter of a century they began to take steps to throw it off.

On a certain day we went by thousands to Trenton to beg the legislature to do something to free us from this thralldom. We went from all the churches, from the boards of trade, reform organizations, citizens' leagues, and the like. But (would you believe it?) the sergeant-at-arms of the legislature was the creature of the race-track gamblers, and, with the consent of the legislature, shut the doors and locked them in our faces. We were denied the right of petition.

Then the hearts of the sons of those old Jersey Revolutionary fathers who had fought at Brandywine and Trenton and Monmouth took fire with moral indignation. They went home and set New Jersey on fire from Sussex to Cape May. We came out from our little prayer-meetings (we had prayed long enough), and gathered in great mass-meetings in our largest churches. I recollect that, in Jersey City, we met in Dr. Scudder's great tabernacle, which held a vast multitude of people. Over one side of the arch above the altar we put a black list of the legislators from our town who had misrepresented us, and whom the religious and moral people were to vote against at the next election, and down the other side the names of candidates for the legislature whom we knew we could trust. We sent over for Dr. Parkhurst, from New York, and he came across and sounded the keynote for us one night. Then we went into a hot campaign to revolutionize things for righteousness over the State. Party lines vanished. There were no longer Democrats, Republicans, or Prohibitionists; it was decency against indecency; morality against immorality; light against darkness; God against Satan; heaven against hell.

When election day was over we found that we had swept the enemy before us everywhere, as one of those Atlantic cyclones that comes up the Jersey coast in the fall clears every thing from its paths. Oh how the people rejoiced! At Paterson they climbed to the top of the Orange Mountains, just back of the city, where Washington's troops were encamped during the Revolution, and there on the top of those mountains, just where the old patriot army built its bonfires of rejoicing the night after the conquered British sailed out of New York for England at the close of the Revolution, our people built bonfires. They shined far out over the Atlantic, and the sailors a hundred miles away on the ocean asked, "What's going on over on the Jersey shore?" Next day, when they sailed into New York harbor, they were answered, "They have smashed the gamblers and ballot-box stuffers in New Jersey." Then after our rejoicing came the day of judgment for the tyrants who had so long lorded it over us. In one day I saw thirty-two (if I recall correctly) of the former political bosses and ward managers and ballot-box stuffers of Jersey City brought into court and sentenced to heavy fines and good long terms of imprisonment in the penitentiary at Trenton. Their friends had brought up hacks to take them down in state to the Pennsylvania depot on the road. The judge saw the hacks, and said, "None of that, Mr. Sheriff; bring some open street-cars up here; handcuff those men; load them in and take them to the railroad station." So they went down in open street-cars, in full sight of the whole city which they had so long outraged. When they were safely in the penitentiary, New Jersey drew a long breath of relief. For the first time in twenty-five years she sat redeemed, purified, and free. She had broken the evil power that held her in its grasp; and now she has incorporated in her constitution that there shall be no more gambling within her borders, not even at church socials.

I covet for Ohio such an opportunity of breaking the power of the beastly abomination of the liquor-traffic which has so long held us in subjection. That opportunity will some day come. The people are growing more and more restless and angry under the tyranny of the saloon, and in some supreme hour of exasperation they will arouse themselves and break the chains which have so long bound them.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

REMEDIES FOR BORERS IN FRUIT-TREES; RABBITS, MICE, ETC.

For some time past we have been receiving flaming circulars in regard to new inventions in the way of tree-paint, etc. These circulars tell how much money can be made in a day by visiting farmers, and urging everybody to go into it. I forwarded one of them to one of our Ohio Experiment Station people, for his opinion. Here it is:

A. I. Root:—I know nothing about Brown's Tree Paint, but I should hesitate to use it extensively until assured that it would not kill the trees. It will probably keep the rabbits from gnawing the trees, but I doubt its value to keep out borers. If it has been fully tested it ought to be better known, and we would have heard it through the regular channels;

besides, there ought to be some names given of persons who are recognized as *authorities*, and who have given it a trial. It may be a good thing; but I say, let us have some proof of its value. W. J. GREEN.
Wooster, O., July 28.

I wish particularly to emphasize the point that Mr. Green makes. These fellows have a host of testimonials, but they are all from somebody whom nobody knows any thing about. They do not come from our experiment stations, nor from men engaged largely in fruit growing, nor from our prominent writers on the subject. The worst part of it is, so many of these things that have been loudly puffed have killed the trees sometimes by the hundreds. Below is a letter from one of our subscribers; and as our friend has no pecuniary interest in the matter, we can not for a moment doubt his statement. I shall be glad indeed if our experiment station would tell us what they know about it. It is cheap, and easily applied. If friend Barr has used it eight years, without any injury to his trees, I think *we* are pretty safe in using it.

If your apple-trees are bothered with borers, use gas tar, and you will have no further bother. I use a little swab—tie a rag around a little stick; use that in place of a brush; put the tar about 2 inches below the ground and up on the trunk of the tree a foot or 18 inches. That is proof against borers, mice, and rabbits. No rain will wash it off, but it must be put on every spring. The tree expands, and that leaves cracks for the borers.

I use it on apples, peaches, plums, and cherries. If I were there to talk to you I could tell you what trouble I had before I used the gas tar. Put it on the ones that you have cut the worst, and take the borers out, and you will be surprised to see how fast they will heal up. I have used it for 8 years. B. F. BARR.
Flagler, Iowa., Aug. 8.

SOME QUESTIONS ABOUT GROWING TOMATOES.

What are the best varieties of tomatoes? Does it pay to grow extra-early varieties when they are so small and worthless, for the sake of having them a few days or weeks earlier? Is there a better tomato than the Ignotum or the Dwarf Champion? By sowing the seed, say by January 1, how early can we have ripe tomatoes? JOHN MAJOR.
Cokeville, Pa., Aug. 15.

There are now such a great number of really good tomatoes it is a pretty hard matter to say which is best. The kinds you mention are probably as good as any for general purposes. The Dwarf Champion is a strong grower, stands up well, is quite early, and the tomatoes are as handsome as any known, but they are not of very good size. The Ignotum is about as large as any good-shape tomato. While the color is not quite equal to that of the Dwarf Champion—that is, in the opinion of some people—it is one of the very best all-round tomatoes.

Your next question depends upon the market. We have sometimes got about as much money for the small early tomatoes, say the Earliest in the World, as for the later ones, for people will often pay five and ten cents a quart for the first that come when they will hardly give the same price per *peck* when everybody else has them.

The answer to your last question will depend upon the greenhouse and the man who owns it. With every thing in tiptop shape you should have tomatoes in March from seed sown the first of January. We rarely get them under glass, however, until some time in May; but our Ohio Experiment Station, I think, has produced nice tomatoes under glass every month in the winter. The tomato is very tender; and to make it fruit indoors the temperature of the greenhouse must be kept just right.

KEEPING EGYPTIAN ONION-SETS OVER WINTER.

This is the way I do: About this time, Aug. 15, I pick the sets, spread them out thin on the upstairs floor of my wagon-house, where they always get perfectly dry, and just let them alone until I get ready to plant in the spring. I plant in May. I do not cover them at all over winter. In sorting them over in the spring I always find some that are dried up, but not many. I think they are those that had long sprouts before they were gathered.
Lordstown, O. H. A. SIMON.

REPORT FROM THE ACORN ONION-SET AND THE DARLING STRAWBERRY.

I bought a few acorn onion-sets of you last spring, and they are the finest onions I ever raised, especially the red ones. In regard to Darling strawberries sent out, I got one runner plant, and not a berry, but they are making an immense growth, very strong, and *lots* of runners this year; but I shall not bother with them any more, as I think they are too much on the "Michel's Early" order. EUGENE MANNING.
Jacksonville, N. Y., Aug. 5.

MORE ABOUT THE PAPAYA OR MELON-TREE.

Papaya is one of the most valuable remedies known in the cure of stricture. It digests and dissolves lymphatic growths, without irritation. R. R. HARRIS.
Bloomingville, Erie Co., Ohio, Aug. 5.

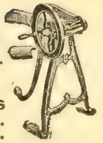
You would be very much interested to see three papaya-trees that have come up in the back yard just by the banana. They are from the seeds of the first papaya you ate when here in February. One of the trees is 4½ feet high, and has blossoms on it. You remember that General Hastings said they required eighteen months to fruit. I have been asked by McIntyre, of California, whether the tree would grow with him in Sespe Canyon. It won't stand frost, but it might be possible to grow them under glass for two months, setting them out as soon as frost is over, and getting fruit same year. If they were all as smart as Miss Cornish's tree they might be grown in Kentucky. W. K. MORRISON.
Devonshire, Bermuda, Aug. 31.

ROBBING SICK PEOPLE.

On page 595 I mentioned the fact that I was going to send our Ohio Food Commissioner the article in question. Below is his reply in regard to the matter:

Mr. Root:—I have read with interest your article entitled "Robbing Sick People." If the practice to which you refer is considered a crime, what shall we say of those who drug soothing-syrups and emulsions with cocaine, morphine, and chloral, and sell them for harmless vegetable remedies? This practice is one of the most serious and dangerous of which I have any knowledge, and ought to receive the condemnation of every law-abiding citizen of the United States.
J. E. BLACKBURN,
Ohio Dairy and Food Commissioner.
Columbus, O., Aug. 10.

Since the above was written I have read in some of the papers that a patent-medicine firm in New York had sued Commissioner Blackburn for $200,000 damages. Let us see to it, friends, that our experiment stations, food commissioners, and other like public officials, have our hearty encouragement and support in this matter of exposing and driving out those who would sacrifice life, property, and every thing else, in their greed for ill-gotten gains.



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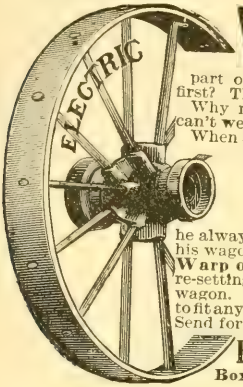

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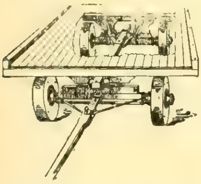

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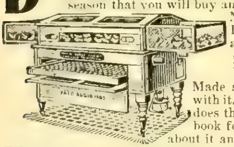

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We are entirely sold out of California honey, both water-white and light amber. We have choice Wisconsin clover and basswood mixed, in 60-lb. cans, at $9.00 per case of 120 lbs.; in gallon cans at $1.00 per gallon; 6 gallons for $5.70. We have also southern amber honey in 60-lb. cans, at $7.20 per case of 120 lbs. Samples free to intending purchasers.

FACTORY IMPROVEMENTS.

The delivery of our new engine has been delayed till the middle of October, so that we shall not shut down till then, and it is likely to be toward the middle of November before we start the new engine. We expect to continue one of our present engines driving a part of the machinery in the wood-working building during most of the time when the changes are being made. If in need of any odd sizes or special work before December, let us hear from you promptly.

THE DANZENBAKER HIVE.

Mr. Danzenbaker brings us many favorable reports and suggestions relating to his hives and plain sections, from those who have been using them from one to three years. His hives may be furnished with open end, or reversible style of Hoffman brood-frames, being supported with iron lugs at the center of the end-bars. As many orders for his hives could not be filled in time during the rush this past season, he will consider it a special favor if those intending to use them for 1899 will write to him their preference for style of brood-frames, and the number of hives they may need, that a full stock may be ready when wanted.

He has also a few hundred copies of "Facts about Bees," for 1898, on hand, that may be had for a 2 cent stamp of The A. I. Root Co., or F. Danzenbaker, Box 66, Washington, D. C.

HONEY MARKET.

We are having a brisk demand for honey, and it is not an easy matter to find sufficient choice honey to supply the demand. We now have a number of unfilled orders on hand, and no honey to supply them. We have quite a little honey engaged, but it is slow in arriving. We hope to have soon a supply from the West. Visiting the Cleveland market recently I found it bare of honey, and dealers there have been taking of us every available lot. Inquiries and orders from other Ohio cities show a scarcity of honey. Much of the honey we do get is somewhat inferior in quality. All the sources from which we get information show a short crop, and the demand should stiffen up prices to a greater extent than many of the market reports are yet showing. We should like to hear from those having choice comb honey in excess of their requirements for the home market. Give description, and state price at which you offer it. We could place two or three carloads to good advantage in this State, if the parties are not supplied soon from some other source.

Special Notices by A. I. Root.

POTATOES FOR SEED OR TABLE USE.

We can now furnish very fair New Queen, State of Maine, and Rural New-Yorker potatoes at 75 cts. per bushel or $2.00 per barrel. Other kinds may be equally low later on.

ALSIKE CLOVER SEED WANTED.

Will the friends who have new seed for sale please mail us samples, and tell what they want for it? I believe the market is at present a little unsettled, and will be until the new crop is more fully on the market.

THE NEW TOMATO, FANCY FORDHOOK.

Just now we are getting a magnificent crop of large-sized, bright-red, smooth handsome tomatoes from the Fancy Fordhook. They, too, were put on exceedingly rich ground, but they bore an immense crop of fruit instead of running up to vines, as many of the varieties would under the circumstances. My impression is now that the new tomato has come to stay It is very much like the Dwarf Champion, only the vines stand up better, and the tomatoes are larger.

THE RENOVATOR COW PEAS.

So many have asked for a few seeds of these that we have decided to send them out in five-cent packages. In each package will be a section of the pod, to show you how they grow. As I am not much acquainted with the various kinds of cow peas, I am not prepared to say how far this one differs from others that may be in the market. But this thing is certainly true: It ripens seed, in our locality, even when planted late in June, and it makes an enormous amount of foliage. In our next we will give an article on cow peas in various localities, both north and south, by J. W. Day, of Crystal Springs, Miss., author of the Tomato Book. These cow peas are enormously prolific. Friend Day tells us of one single vine that grew over a peach-tree, and produced the enormous number of between 200 and 300 pods.

BURPEE'S BUSH LIMA BEANS.

My impression is that W. Atlee Burpee has never received the expression of gratitude from the whole wide world that he ought to have for the favor he conferred on humanity when he gave us the bush lima bean. At the time it first came out, there were some complaints to the effect that it still persisted in sending out vines; and I myself expressed the opinion, not more than one year ago, that it needed a dry season to perfect the pods down so near the ground. Last spring we neglected to plant ours at the proper time, and so it was put off till there was no ground available except some of our very richest strawberry ground, and then we had room for only two long rows. I was going to tell the boys to put them a good piece apart, as the ground was so exceedingly rich; but before I knew it they had planted four seeds in a hill, and the hills were not more than 2 feet apart. But they were in single rows, between rows of other stuff that was all out of the way by the time the beans were ready to bear, so the sun could get on each side of the row. Well, the rows at present look like a hedge fence; and although we have had extremely wet and hot weather during August and September, there is the greatest crop of lima beans on that small area I ever saw, even on poles, and the quality is surely equal to that of any other lima bean ever grown. It is true, some of them sent out vines, perhaps a yard or so long; but these did not seem to do any harm. We have been having lima beans for dinner almost every day for almost a month, if not more, and yet nobody seems tired of them. My opinion just now is that every family in the land should have a row or two of bush lima beans; and, judging from this season's experience, I will say you need not be a bit afraid of getting the ground too rich.

A BEE-KEEPER WHO GROWS MELONS, AND A MELON-GROWER WHO KEEPS BEES.

On p. 737 Ernest speaks briefly of the feast of melons. May I enlarge a little on the subject? The melons we sampled were grown at Rocky Ford, Colorado. I had been eating a good deal of trash about that time, and I concluded I would not dare to even taste of the melons; but when I saw the rest having such a "picnic" I concluded I would just "sample" them, sick or no sick; and they were so exceedingly delicious that I really could not find a stopping-place, and, to my great and agreeable surprise, I was not sick a bit. Well, we made the melon-grower "stand up" and answer questions. We were especially interested in hearing him tell that he never succeeded in growing nice melons until he put bees enough in his melon-patch to fertilize all the blossoms. Now, may be I have made right here an awful mistake. If so, somebody will correct me; but, if I remember correctly, he said he had four hundred *acres* of melons, and that it takes at least 400 colonies of bees to fertilize them properly, and that it is now pretty clearly settled that you could not grow a large crop of nice melons without having bees in the melon-patch, say a good colony to every acre of melons. If you have never tasted a Rocky Ford melon, get one the very first chance you have, and agree with your old friend A. I. Root that there is not a nicer fruit on the face of the earth. I do not know why somebody did not think to get a Kodak view of the convention while the members were all having "rest and refreshment" with those crates of melons. After we had had all we wanted, the remnants were given to the Indians who held forth just back of Apicultural Building. By the way, I have an Indian story for the boys, saved up for our next issue.

HOME TALKS.

Owing to my absence from home, attending the convention at Omaha, together with a side trip to South Dakota, my usual Home talks will not appear in this issue; but the article on page 741 will have to take their place. Please be patient, friends, and I will give you plenty of Home talks in our next. In fact, I have a great lot of matter, gathered from my travels and elsewhere, that I am exceedingly anxious to give you. By the way, I feel greatly complimented to see that the *American Bee Journal* has copied my Home talk entire from the text, "Be sure your sin will find you out."

KIND WORDS FROM OUR CUSTOMERS.

The goods came to hand in first-class shape—the best lot of bee-goods I ever saw. I am greatly pleased.

Moscow, Ont. J. A. AMEY.

OUR STRAWBERRY-PLANTS.

The strawberry-plants came all right—the finest plants I ever saw shipped in the fall. After sundown I planted them out in freshly dug ground. I dug all the holes first, then filled them with water, then put in the plants. I shaded them from the hot sun, and watered them thoroughly every night, and they are doing finely. I can grow 100 quarts of berries from 50 plants. We have a splendid system of waterworks here. I have been growing strawberries for ten years. J. W. THOMPSON.

Canton, S. D.

[We presume our friend means he can grow 100 quarts of berries from 50 plants set out in the fall. My impression is, that the plants should be put out in July—certainly not later than August; then it would not be very difficult to get two quarts of berries from the original plant and the young ones that can be grown around it during the fall. The great secret of securing such a result is, as our friend states, a perfect system of waterworks, so that the plants, old and young, may push right along without any interruption.]

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QUEENS BY RETURN MAIL.

Daughters of best imported Italian queen mother, warranted purely mated to drones of imported stock from a different source; hence, a direct cross. Twelve years as a honey-producer on a large scale has taught me what good queens mean to the producer as well as how to rear them. Price of queens, 50 cts. each. Safe delivery and satisfaction, or money refunded.
L. H. ROBEY, Worthington, W. Va.

IF

IF you would like to see a picture and description of the finest honey-plant in the world, get the Bee-keepers' Review for July and September.

IF you would like to know where to find the best honey-location, to see it described with pen and picture, read the September Review.

IF you are interested in knowing the methods of our best queen-breeders, and would enjoy seeing some fine engravings upon the subject of queen-rearing, one of them a double-page picture, get the Review for August.

IF you would like to learn how to so group and arrange your hives that they will occupy but little space, and yet give to each hive a distinctive location, see the article and diagram on this subject in the August Review.

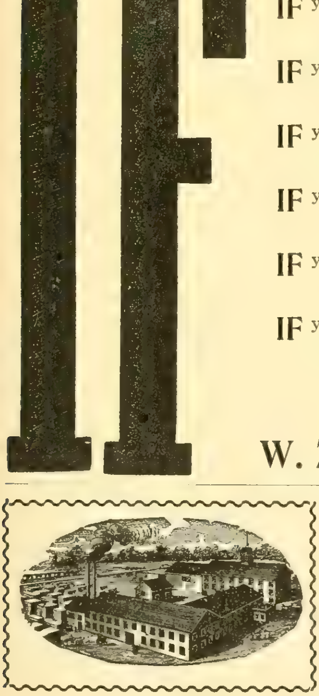
IF you are interested in knowing what is going on among bee-keepers across the ocean, read "Notes from Foreign Bee-journals," in the Bee-keepers' Review.

IF you wish to see pointed out the errors and fallacious ideas that creep into current apicultural literature, get the Review and note the courage and ability with which Mr. R. L. Taylor conducts the Department of Criticism.

IF you wish a bright, clean, clear-cut, sprightly, beautiful, illustrated, go-ahead, up-to-date, really helpful, useful bee-journal, subscribe for the Bee-keepers' Review.

IF you are not now a subscriber, send me $1.00, and I will send you 12 back numbers, the Review from the time your subscription is received to the end of 1898, and then for all of 1899. The sooner you subscribe the more you get.

W. Z. HUTCHINSON, = = = Flint, Mich.



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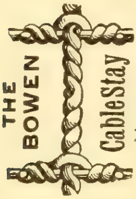

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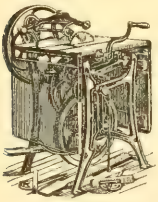

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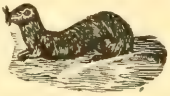

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J. P. MOORE, Morgan, Pendleton Co., Ky.

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QUEENS. Now is the time to re-queen, when you can get the best of queens from Daniel Wurth for 45 cts. each; 6 for $2.65, or $5.00 per dozen. Sent by return mail.
DANIEL WURTH, Falmouth, Rush Co., Ind.

Honey.

If you want Colorado alfalfa, sweet clover and cleome honey, comb or extracted, correspond with the secretary of "The Colorado State Bee-keepers' Association." Our honey ranks high in quality. Car lots a specialty.

Address **F. RAUCHFUSS, Elyria, Colo.**

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G. C. GEARN, 864 Fifth St., San Diego, Cal.

FOR SALE. Extracted clover honey at 6c, in 60-lb. tin cans. M. ISBELL, Norwich, N. Y.

I have 15 hybrid queens for sale at 25c each, or 5 for $1.00. ALBERT HINES, Independence, Ia.

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WANTED.—To exchange for extracted honey, one trio of Buff Cochins, one trio of Light Brahmas (birds are pure bred), 1 Beagle hound (good hunter), shipping-cases, bee-hives, and sections.
J. M. KINZIE, Rochester, Oakland Co., Mich.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
BYRON WALKER, Evart, Mich.

WANTED.—The addresses of persons having cholera among their poultry. CHAS. MCCLAVE,
New London, Ohio.

WANTED.—To exchange rifles and shotguns for incubators, relics, and fire-arms. Also wanted a shingle-mill. WM. S. AMMON, Reading, Pa.

WANTED.—To sell cheap for cash or to exchange for any thing useful, St. Bernard puppies. Could use incubator, Poland-China sow, or registered Shropshire sheep. W. W. PREVEY, Elroy, Wis.

WANTED.—To exchange Italian bees and queens, homing Antwerps, Blue, Blue Chequer, and Silver Dun, for Belgian hares, boys' bicycle, or offers.
W. E. FLOWER. Ashburne, Pa.

WANTED.—To exchange for white extracted honey a 6-inch Vandervort fdn.-mill in good order; also dipping-tank. WARD LAMKIN, Ledyard, N. Y.

WANTED.—No. 1 white comb honey in 4x5 inch sections; also to furnish my hives and 4x5 sections for a share of the next honey crop, to parties within 100 miles of this city. Address *at once*
F. DANZENBAKER, Washington, D. C.

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Honey Column.

CITY MARKETS.

CHICAGO.—Fancy white-clover honey brings 13 cts., with best grades of white comb about 12 cts.; off grades with more or less empty cells, 10@11 cts.; ambers, 8@9 cts., according to grade, with fancy at 10 cts.; extracted, white, 6@7 cts.; ambers, 5@6 cts., dark, 4½ @5 cts.; beeswax, 26@27 cts.

R. A. BURNETT & Co.,
Oct 27. 163 S. Water St., Chicago, Ill.

ALBANY.—Our market is in good healthy condition, but prices full high for free consumption. We quote fancy white comb, 14c, but such has to be choice, and the proportion of such in all shipments is small. No. 1 clover, 12@13c; No. 2, 11@12; mixed, 10@11; No. 1 buckwheat, 9@10; medium, 8½@9; extracted white, 6½@7; mixed, 6@6½; dark, 5@5½.

MACDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
Oct. 7. Albany, N. Y.

MINNEAPOLIS.—Fancy white-clover comb, 12@12½; No. 1, 11½; amber, 10@10½; extracted, fancy white, 6½; amber, 5½@6. Would advise liberal shipments *at once*, both extracted and comb.

S. H. HALL & Co.,
Oct. 10. Minneapolis, Minn.

BOSTON.—Our honey market shows a decidedly firmer tone since our last. A few sales have been made as high as 15c for extra fancy, but the bulk of the stock grading from A No. 1 to fancy is sold at 14, while some off stock brings but 12½ to 13. We do not expect to see any lower prices, and advise shipments at once. Florida extracted, in barrels, mostly 6@7, with a good demand. Beeswax finds slow sale at 26c.

Oct. 8. BLAKE, SCOTT & LEE, Boston, Mass.

NEW YORK.—Receipts of new crop comb honey have been heavy the past week; quality averages better than last season, with a good demand. We quote: Fancy white, 14; No. 1, 12; No. 2, 11; buckwheat, 8½@10. Market is in good shape for extracted honey. We quote: White clover and basswood, 6@6½; amber, 5¼ @5¾; Southern, in barrels, 54@60 per gal. Beeswax dull at 25½@26½. Write for shipping directions.

FRANCIS H. LEGGETT & Co.,
Sept. 26. Franklin and Varick Sts., New York.

PHILADELPHIA.—Comb honey selling freely. Fancy, 14½; No. 1, 13½; No 2, 12; amber, 10. Extracted, white, 7; amber, 5½; dark, 4¾. Beeswax, 27.

WM. A. SELSER,
Oct. 8. 10 Vine St., Philadelphia, Pa.

COLUMBUS.—Fancy white, 14@15; No. 1, 12@13; No. 2, 10@11; amber, 9@11; extracted, 5½@7. Comb honey is wanted, and we can take care of from 10 cases to a carload. When requested, we make liberal advances on consignments. Should like to hear from Western and Canadian bee keepers.

THE COLUMBUS COMMISSION & STORAGE CO.,
Oct. 8. 409-413 N. High St., Columbus, O.

NEW YORK.—Comb honey continues to arrive freely, but demand is good and no large accumulations. Price remain firm for fancy, 14; No. 1, 12; amber, 10. Buckwheat 8@9, with some fancy stock glassed, 9½. Extracted in good demand at unchanged prices. Beeswax continues dull at 26.

HILDRETH BROS. & SEGELKEN.
Sept. 26. New York.

DETROIT.—Fancy white comb, 12@13; No. 1, 11@12; fancy dark and amber, 9@10; No. 1, 8@9. Extracted, white, 6@7; dark, 5@5½. Beeswax, 25@26.

M. H. HUNT,
Oct. 10. Detroit, Mich.

FOR SALE.—A few tons of buckwheat honey, comb and extracted. Also a small quantity of basswood. Write for prices. Inclose stamps for samples of extracted. N. L. STEVENS, Venice, Cayuga Co., N. Y.

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Address JNO. A. THORNTON, Lima, Ill.

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Reference, A. I. Root.
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In writing, mention Gleanings.

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1 lb. 1⅜x4x5 sections, 1c each; 25, 20c; 100, 60c; 500, $2.50
1 lb. 1½ or 1⅞, 4¼ " 1c " 25, 20c; 100, 60c 500, 2.50

Sent by mail, postage 2c each, for lots of 25 or over, 1c each. **"Facts About Bees"** and sample **carton** by mail for 4 cents in stamps.

F. Danzenbaker, Box 66, Washington, D. C.

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1 Automatic cutter-head, to cut entrance in sections.
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1 Saw-table. All Root's make machines.

J. W. Bittenbender, Knoxville, Ia.

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Send a 3 oz. bottle and $1.00, and have the honey tested that you buy. See if it is pure. The most complete laboratory for testing honey in the United States.

QUEENS. **Warranted purely mated,** either golden or imported, by return mail. Untested, ¼ doz., $1.75; select tested, ¼ doz., $2.40; best breeders, $2.00. One **sample** queen to new customer, 55 cts. each. **E. A. Seeley, Bloomer, Ark.**

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By HON. EUGENE SECOR, General Manager United States Bee keepers' Union.

The Apiary on the Farm and in the Orchard.
By HON. E. WHITCOMB, Supt. Apiary Department Trans-Mississippi Exposition.

Needs of Bee Culture in the South.
By DR. J. P. H. BROWN, of Georgia.

General Advice to Bee-keepers.
By REV. E. T. ABBOTT, of Missouri.

The Relation Existing between the Apiary and the Successful Production of Fruit.
By G. M. WHITFORD, of Nebraska.

The foregoing list of Special Articles represents a part of the program at the Omaha Convention. Many of the subjects will be followed by much helpful discussion. Of course, many other interesting and valuable contributions will be found in the *American Bee Journal* during the 10 weeks' "trial trip," besides the other regular departments. But in order to secure all these articles, the trial subscriptions should be sent in ***promptly***, as we may soon run out of back numbers from October 1.

Every Bee-keeper in America ought to have the old *American Bee Journal* for 10 weeks from Oct. 1, 1898, and right along thereafter. It will be worth to any one of them ***many times*** its full subscription price. ***Send 10 cents now, anyway,*** and get it for the 10 weeks. Address

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STRAY STRAWS FROM DR C. C. MILLER

PROBABLY we'd better not trouble ourselves with the Dickel theory, mentioned on p. 726, but just watch to see how they settle it in "das Vaterland."

A NEW KINK I saw at Omaha was tumblers of jelly with a coating of paraffine on top to keep it from molding. Beeswax will answer the same purpose.

"FOREIGN MATTER in honey-comb," page 730, reminds me that, when I used sheets of enameled oilcloth, I have known the bees to put the black enamel in the cappings of sections.

DOOLITTLE gets more for his honey by sending "fancy" to Smith and No. 1 to Jones, p. 730. But suppose I send No. 1 to Smith and fancy to Jones (a thing likely to happy at any time), then we're both out.

THOSE ROCKY FORD melons were fine, indeed, A. I., but we've been eating nutmeg and banana melons from our own ground for some days, and I think they're just a shade better. I can make nearly a full meal from them. Come and have some.

THERE'S just one objection to friend Greiner's plan of ventilating, pictured p. 726, and that is that the bottom-bars of the upper story will rest directly on the back end of the lower story, and be glued there. But the advantage may overbalance the objection

THE WEE BEE-MOTH, mentioned page 729, so far as I know does not exist in this part of the country; but a writer in a late foreign journal says that in his region the greater part of the damage done to combs in colonies is by this same moth, although wrongly charged to the larger sort.

ISN'T IT POSSIBLE that T. H. Kloer (p. 732) keeps his Italians hard crowded for room beyond the average, to get them to have a $\frac{3}{16}$ bee-space? If you'll remind us of it in GLEANINGS for June 1, a whole lot will report as to space between combs. [If I do not forget it, I shall be glad to call attention to the matter next summer.—ED.]

YOU SEEM TO THINK, Mr. Editor, that better queens are reared for superseding than in a queenless colony. Well, then, all you have to do is to cage your queen and she will generally be superseded. [But would that be a natural supersedure? Would the bees, if it were not, rear as good a queen?—ED.]

JOHN ARMSTRONG wants me supplied with a machine for cleaning fences, "a small sand-belt for each place to be cleaned." That would be good, but it wouldn't be as cheap as a hatchet for the plain separator, and the hatchet wouldn't need renewing as often as the sandpaper.

W. T. RICHARDSON "has the exclusive right to the bee-pasturage on 12,000 acres," page 723. Now, how does he get that exclusive right? and how does he hold it? I occupy as large a territory, but I've no exclusive right, and years ago I pulled a big lot of trouble down on my head by saying bee-keepers should have exclusive rights. Has Mr. R. bought all that land?

INTERESTING READING is that on page 718, where C. P. Dadant tells the story of their former experiences. Seems like old times to read of honey-boxes with 4 glass sides and 4 corner-posts. But they beat me in the matter of smoke. I had only a burning brand, which I blew with my breath. A. I. Root learned the trick from me, and nearly burned up a colony the first time he tried it alone.

BRO. DOOLITTLE, page 730, talks about my trying to slay him. Tut! tut! I have entire faith in his honesty, and want him to live a long time. He seems to think he's misrepresented or misunderstood. I think not by me. The one distinct thing to which I object is his saying it's right to ship to a commission man buckwheat honey faced with clover, a thing that I know is *not* right "for this locality."

TAKE IT FOR GRANTED that all honey is foul broody, unless you *know* it is not. Any sample of honey that comes to me, no matter whence, is burned if it isn't eaten on the table. [It is our rule, usually, to dispose of samples of honey that come to us from bee-keepers all over the country, who have honey to sell. Very often we take a hundred or so of samples that have accumulated, and toss them into the furnace. In any event, it is not safe to leave them around where bees can get at them.—Ed.]

It's tantalizing that so many bright bee-keepers in other lands persist in burying their lights in languages so hard to unriddle. Why couldn't they write every thing in plain English? But it's some comfort to know that they're sometimes floored by some of our English expressions. A late French journal, quoting a "Straw" from Gleanings, p. 378, translates the sentence, "Then smoke like sixty till bees rush out of hive," after this fashion: "Then smoke till about sixty bees rush out of the hive"!

"I have sometimes thought that, when suddenly deprived of their mother, they are in such haste to supply the deficiency that they start with any thing they can get," quoth ye editor, page 726. Yes, that's what we've all been taught to think; but are you sure the thought isn't wrong? I think I never knew a *strong* colony made queenless to have a young queen emerge sooner than 10 days or later than 12 days. If you will read with care p. 725, column 2, paragraph 3, I think you will see that in such case the bees *must* have chosen a larva of proper age. [No, I am not sure that the thought is right or wrong. Perhaps your reasoning is correct.—Ed.]

W. A. Pryal, page 729, is puzzled to know why exchanging a paralytic colony with a healthy one cures. The explanation that has been given is that the bees are loath to cast out their sick sisters of their own blood, but the strangers make no bones of casting them out. [I do not see, doctor, why you are puzzled. When yellow fever breaks out, the authorities make an attempt to remove or isolate every case. The bees, instead of isolating the sick ones, simply pick them up and carry them out of the hive. A sick colony left to itself is inclined to let the diseased bees and the healthy ones remain together; but when, on the other hand, it receives an infusion of new blood (healthy bees from another colony), that new life proceeds at once to carry off all the sick, thus removing the cause of infection.—Ed.]

There! just what I was afraid of all the time, that friend Dadant would say as he does, page 719, that two stories of Langstroth frames don't work the same as the big Quinby frames. But his reasoning doesn't apply "in this locality," and I don't see why you don't follow my plan at Medina. Put your second story *under*, and then you'll have it perfectly "contractible and expansible," for the brood-nest will be gradually extended downward. The addition of the second story will make the brood-nest warmer instead of colder. But after the section supers are taken off, I put the second story on top. If I wintered on summer stands, I'd put second story under. [My plan was generally, I think, to put a second story on top. That the brood-nest will be warmer when your plan is practiced, there can be no question. Perhaps your way is better. I will endeavor to try it next season.—Ed.]

GENERAL CORRESPONDENCE

LARGE HIVES.

A Historical Resume; Small Hives Not Advised for Short Seasons; Small Hives, Small Colonies.

BY C. P. DADANT.

In my previous article I told you how Mr. Dadant, senior, came to the use of large hives. I will now explain how he succeeded in introducing them in France, Switzerland, Italy, Belgium, etc., while living in America.

In 1867 a neighbor of ours went to the Paris International Exposition, and my father asked him to get for him the address of the French bee journal, *L'Apiculteur*, which had then been in existence for twelve years. On receipt of the sample copy of this magazine, he discovered that bee culture in Europe was very much behind, the hives in use being the old-fashioned straw skeps. The inventions of Berlepsch, Debeauvoys, and others were too primitive to make movable-frame hives practical. He at once began writing articles for *L'Apiculteur*, advising the use of the Langstroth invention of hanging frames with movable honey-boards, and at the same time advised the use of much larger hives than were then in use. The reader will remember what I said in a previous article, on the capacity of the hives used in France, and of the opinion expressed by their leading apiarists as to the laying capacity of queens. The hives were much smaller than those used here at present, and the results were correspondingly smaller. Bastian, who used a hive similar to the Berlepsch, wrote that there was no necessity for a super containing more than 6 to 12 lbs. of honey.

Thus the ideas advanced by Mr. Dadant, senior, were considered unreasonable, both as to size and shape. Movable-frame hives were fit only for experimenting scientists, and large hives were worse than useless.

It is really amusing, at this date, after a lapse of thirty years, to read the arguments given by the supporters of a dying routine against the new methods which slowly but finally superseded their now obsolete methods. I have before my eyes an article written by my father, and inserted in *L'Apiculteur* of December, 1868, very nearly thirty years ago, in which, as an argument in favor of larger hives and better methods, he translates a report of A. I. Root, given in the *American Bee Journal* for October, 1868. As it is much easier to quote the English itself, instead of retranslating, I will take this passage as I find it in the *American Bee Journal*, Vol. IV., page 64:

"In the spring we selected a strong stock, with a very prolific queen, and first removed every bit of drone comb from the breeding-apartment, and supplied its place with clean straight frames of worker comb; second, we arranged the second story, as it was a Langstroth hive, so as to hold frames above as well as below; third, the honey was removed by the machine at intervals of from three days to a week, or just before the bees were about to seal it up; fourth, as the swarm soon became very populous we were several times obliged to remove comb from the center, and supply its place with empty frames, to prevent their clustering and 'loafing,' so that they have in reality built several frames of comb, besides yielding us 203 pounds of pure honey up to this date, July 21, and from appearances we think they are not nearly through yet."

Now, what do you suppose the editor of *L'Apiculteur* said in regard to this? He sneeringly wrote: "This figure of Root's reminds us of another. We once read in a publication of the Roret editors, at the time of the effervescence about the 'drawer hive of the Englishman Nutt,' that an owner of this marvelous hive had harvested 1100 lbs. (550 kilos) in one year from the same hive."

So you see, friend reader, how the new ideas were received by a class of men who had been accustomed to consider themselves as the leaders of progress in this particular branch of industry. There was no progress outside of them; no discovery had any value which they had not made; and those who succeeded with improved methods and larger hives were nothing but humbugs, "American Barnums," as Hamet had finally named my father. The honey-extractor was stamped "joujou inutile" (useless toy). It was uphill work to get new ideas started with such a light-extinguisher as the old *Apiculteur* was; but, happily, men of progress were to be found who were willing to listen to plain sense. My father first found listeners in the *Journal des Fermes*, in which he had long discussions on the size of hives with several, and especially with Bastian, already mentioned in this article. Yet Bastian, who was very fair in the discussions, acknowledged that the hive should be large enough to accommodate the laying of the queen, and furnish room enough for the provisions. But Berlepsch and Dzierzon used small hives, and Bastian followed them. In his book he supports small movable-frame hives. Later our good friend Mr. Bertrand began the publication of his most excellent sheet, the *Revue Internationale*, in Switzerland. Then the work of progress began to tell on *L'Apiculteur*. Slowly and steadily the opposition to movable-frame hives and to larger hives than formerly used had to be relinquished; and when Hamet, the stubborn, sarcastic, and unprogressive editor of this sheet died, that was the end of box-hive methods. The Italian bee journal, *L'Apicoltore*, also had entered the field for a better cause, and the works of Dubini and of the late De Layens finished the work.

Doctor Dubini, in his book, page 258, says: "The Americans give preference to spacious hives [remember that Europeans previously used a smaller hive than the eight-frame Langstroth]. De Layens uses a hive with a capacity of 80 liters (80 quarts); many find themselves satisfied with one of 75 quarts. This capacity may be varied by means of a division-board, and thus diminish or increase the number of frames at will, which permits:

"1. To wait till the weak colonies become strong.

"2. To diminish the honey consumption in winter by reducing the room and keeping the heat concentrated.

"3. To help the bees to defend themselves better against their enemies.

"4. To increase the activity of the bees in a good season.

"5. To enable the queen to continue her laying by being furnished with plenty of empty cells.

"6. To agglomerate a greater number of bees for the time of blossoms.

"7. To increase the crop, in complex proportion with the space, the validity of the queen, and the number of worker bees.

"It is a grave error to believe that, in countries where the blooming season is short, small hives are advisable. We hold that small hives give small swarms, which can not gather even the necessary food, much less the surplus, in the short moments that hardly ever fail in the worst seasons, in which the flowering, though of short duration, still is sufficient for strong colonies to harvest a plentiful supply." (*L'Apicoltore*, Dubini, 1881.)

De Layens also cites the Americans as using large hives. His views of America are taken from Mr. Dadant's writings and from those of father Langstroth, whose book is now well known in Europe through the translation made by my father. The Dadant-Langstroth and the De Layens hive are now about the only hives sold in all the French speaking countries; and the *Revue Internationale* periodically publishes statements showing a great difference in results in the comparison of these hives with smaller types all over French-speaking Europe.

Hamilton, Ill.

[As I have several times said, history repeats itself. As there were, years ago, advocates of small hives, and opposers of large ones, so we have them to-day. I may, some time in the future, change my mind; but I can not help thinking that more *money* can be secured from a large colony in a large hive. But a large colony in a small hive or a small one in a large hive, will accomplish little more than a big cart-horse pulling a baby-cab, or a dog trying to pull a lumber-wagon. The two "larges" must be hitched together, and then we have a team that will do some work.

I note that Dr. Dubini says that "it is a grave error to believe that, in countries where the blooming season is short, small hives are advisable." While I think there is a great deal of truth in it, I do not go so far as to deny or affirm the proposition.—ED.]

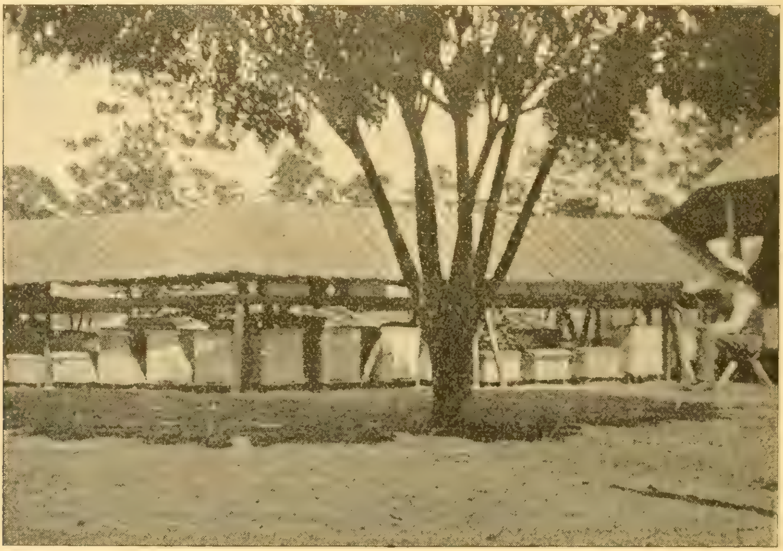
CRAYCRAFT'S BEE-SHED.

Importance and Convenience of Shade in Florida.

BY JOHN CRAYCRAFT.

Having learned by experience that a compact placing of hives under a shed is an indispensable adjunct to practical bee-keeping in Florida, I hereby send you a ground-plan of my apiary of 112 hives, and also a small picture of the outward form and manner of locating the hives. The shed is octagonal, each side being 16½ feet on line outside and with front of hives, except the two angles running up to the shop and extracting-room.

The shed is cheaply constructed. The posts are 3x4 inches, and rest on pine blocks. All the other timbers are 1½x3, using this size for rafters, ties, and roof-strips to nail the boards on, which are of cypress, 5 feet long, making the shed about 8 feet wide, so that my hives will lean back about a foot, leaving a walk 3 feet wide, as my hives are all 16 inches square, outside. But for the Langstroth hive the shed should be roofed about 10 ft. wide, so that the hives could be placed back under the shed about a foot, leaving about a three-foot passage. For ease of handling, the entrance to hives should be at the side, so that the operator can work from the side instead of from the end of frames.



CRAYCRAFT'S BEE-SHED, ASTOR PARK, FLORIDA.

I give no details of material to construct such a shed, as any mechanic can make out that. In regard to the form, it is very compact, and a walk around under the shed will show at a glance where attention may be required ; or a step into the passage leading into the inner court will show the section of a swarm issuing. All the work is done from the back of the hive, with very little annoyance from bees coming and going; and, besides all this, I have all supers right up over the hives on the framework, or I can set extra hives for queen-rearing up under the eaves of the shed, as there is sufficient space there so that I can place as many nuclei as I have hives below, which is 112.

I place my hives on four stakes driven into the ground about six inches, and leave about four inches above ground, so that the hives stand four inches high. I have what I term an "apron" to reach from the entrance to the ground, made of a thin board about six inches wide, and as long as the hive is wide. I bevel one edge to an angle of about 45°, and tack to the hive, letting the other rest on the ground so that, if it warps, it will keep its place to the hive. This is a great help to weary bees. Where something better than stakes is desired, four bricks set on end four inches in the ground, in true mechanical order, are pleasing to see.

I am unable to see how I ever kept bees so long before building this shed. I can continue my work, rain or shine, often working bareheaded, without gloves or veils, doing a great part of my manipulation sitting, as I have several stools around the shed. A shed of this form is far superior to a vine or tree. The shade is always where you need it, and the hives will be always dry and clean.

Astor Park, Fla., Aug. 3.

* * *

FULL SHEETS VS. STARTERS IN SECTIONS.

Comb Honey Better in Flavor than Extracted, and Why; Worker Cappings Prettier than Drone.

BY F. GREINER.

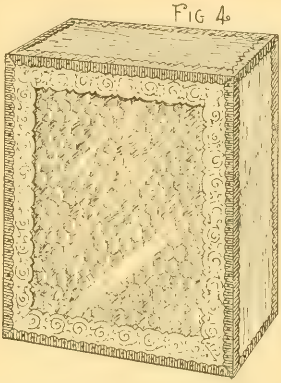
It was with a great deal of satisfaction that I read friend Aikin's article on the use of comb foundation—in particular the part that touches upon foundation in sections. It is just exactly for the reason that honey built upon foundation is not equal to the natural product for "tenderness and fine edible qualities" that I have always been opposed to the use of foundation in sections, except for starters. It does me good to find occasionally a bee-keeping brother who thinks as I do on this subject, and has the courage to say so in public. I am pretty well satisfied that it pays to use full sheets in sections in order to get the combs well attached to the wood, and sealed all around, and also to get a larger yield generally; but it seems to me that the one thing of greatest importance in the production of section honey is not so much to have the combs solidly attached and sealed all around as to produce an article possessing the finest edible qualities possible.

The ardent writer who, some time ago, told his brother bee-keepers who produce such honey as was pictured on page 128, Feb. 15, top tier of plate, "they had better soak their heads and brimstone their bees," has shot far over the mark, and I very much doubt that his honey is anywhere near the fine quality that I like so well in the comb honey for my table. I consider it immaterial whether the comb is attached to the wood or not, if the kind and the quality are right, the comb delicate, and of a melting character. Once in a while I have had whole supers filled with fancy honey, sections all well filled, combs built out squarely into the corners, and still not attached to the wood except along the top, and perhaps a brace or two at each corner. A flake of such honey is indeed a beauty when it appears on the table, for it need not be mutilated by the knife in cutting it out. I do not imply that it would be prudent to aim to produce such honey, because it would not carry well; but I believe it would attract just as many buyers if we could get it into the market.

It had not occurred to Bro. Aikin that worker comb in the finished product looks any better than drone comb till he was told by some one, and now, he confesses, he does not know it yet. That, of course, is a matter of taste; but to the great majority of bee-keepers and honey-consumers, worker-comb honey looks much the prettier. I can detect but little difference in the edible qualities of the two. No, I have not measured the thickness of drone comb, and compared it with that of the worker comb; but I have eaten both kinds often; and when they were built out under the same conditions the difference has appeared to me infinitely small. However this may be, I should be glad if I could induce my bees to build more worker comb in the sections. So many bee-keepers use full sheets of foundation, and their product is so very uniform and well built out, that I have been tempted many a time to do likewise. This year I filled all my sections about half full of extra-light section foundation, but with a result I am any thing but pleased with. I am sorry enough to have used so much foundation. I have gained the point of more uniformity, but the gobbiness of the upper half of each comb is beyond endurance. Wife says, "Don't bring any more such fishbone honey up to the house." No more foundation for me! However, this does not include the new drawn foundation, which I have not yet fully tested. From its fragility and delicateness, I think it has a promising future providing the price is not prohibitory.

Aside from having our sections filled with all worker comb, they may be made more attractive by glassing them and then trimming with colored paper. Before we adopted the one-piece section, which is not well suited for glassing, we did a great deal such work; and when we wanted to do a very fancy job we used paper lace in connection with the colored paper, as shown in the accompanying drawing.

FIG 4



We almost always obtained a higher price for such "fixed-up" honey; and the glass, being sold as honey, paid for the work. The glassing itself was a very simple operation. I would say the sections we used were four-piece nailed, the glass fitting in between top and bottom pieces, which projected over the sides ⅛ inch on each side, or about the thickness of the glass. We used common glue to fasten on the glass. After being cleaned from propolis the section was placed on the table flat, dropping just a little glue on the edge near each corner of the narrow sides; the glass was adjusted, and the section turned over. However, it had to be laid on two little sticks a trifle shorter than the glass was wide, and about ¼ inch thick. The object of this was to have the weight of the box press the glass tight against the wood. The other side of the section was now treated in the same way, placing a drop of glue near each corner, and laying on the glass. Two more short sticks were placed on top of the section, ready to receive the next section. So they were piled up eight or ten high with these sticks between, and left so till the glue had hardened. As glass varies in thickness sometimes, we found it necessary to trim off any superfluous wood projecting over the glass with the knife. The boxes were then ready to be given the finish. Gum arabic being colorless, we found this to be the best for sticking the paper to the glass and wood.

With a suitable pinking iron we prepared the necessary paper strips and cut them the proper lengths to just go around the boxes. We then bound the edges as shown in the illustration, making a very neat package. Of course, it was a great deal of work to do all this with several tons of honey each year, but we did much of it evenings. Children and all helping, we could turn out quite a lot in one night. The crating had to be done by daylight the next morning. One can not well grade by lamplight.

The people hereabout must be different from what they are with Bro. Aikin, for I find but few who like their honey without some wax. Indeed, I do not know one person who prefers extracted honey to that in the comb. It is my opinion that honey out of the comb soon loses that fine aroma peculiar to it when in the comb, or when first extracted; and after it has granulated and is liquefied again, all the fine qualities it had once are then gone, even when the liquefying has been done with the greatest of care. My faithful better half, for instance, dislikes liquefied honey, while she rather enjoys the new article. Thus our experience is contrary to Bro. Doolittle's, who recently made the claim that extracted honey improves by liquefying.

PLAIN SECTIONS SATISFACTORY, BUT NOT PERCEPTIBLY BETTER FILLED OUT THAN THE OLD STYLE.

My plain sections are not filled perceptibly better than the others, but we have had a very scant honey flow all around, and of short duration at that. The cappings of the sections used in connection with the fence are perfectly level, except in a few instances where a space in the fence had by accident become wider than the two-twelfths inch. Here I can notice a slightly wavy appearance. I am more favorably impressed with the plain section than I am with the fence, although the fence works all right. I intend to use whole cleated separators by the side of the fence, and in the same cases, too, in order to be better able to determine more correctly how far the fence may be relied upon as giving us better-filled-out sections I find there is not any more danger of injuring the plain section in handling than the scalloped. If there is any difference it is in favor of the plain. They have no projections to catch into the next section. It may be necessary to use followers with them in the shipping-cases, for it is difficult to get the first sections out of a crate without this convenience.

Naples, N. Y., Aug. 10.

[We down here in Ohio do not know of any method whereby worker comb can be generally secured from a mere starter in the section box. Over half of the combs will be finished drone, and these will be more "gobby" eating than comb honey from full sheets of worker foundation. Or, to put it another way, if we use only starters we shall have more drone than worker; and natural-built comb is less friable than worker comb from full sheets of foundation.

It is possible that honey, when extracted, loses some of the delicate aroma that it has while in the comb. Wax of itself has a beautiful aroma, even when there is no honey in it. Over and over again, persons when visiting our wax-room call attention to the beautiful honey flavor that they smell, notwithstanding there may not be an ounce of honey in the room. Now, then, if wax has a flavor or aroma peculiarly its own, this, when added to honey, would give a combined effect that is pleasanter to the eater than the same honey free of wax.—Ed.]

* * *

THE ARENA; THE COMBAT BETWEEN DR. MILLER AND MR. DOOLITTLE.

Large Entrances vs. Small Ones; Some Interesting Observations Regarding the Internal Temperature of Brood-nests.

On page 623 I am informed by Bro. Doolittle that not only am I to be driven from the arena along with a sympathizing friend, but the arena itself is to be annihilated. Before he gets through, Bro. D. informs us that the editor, "true to his manner of always being with the man who can shout the loudest," "has already climbed away from Dr. Miller's side in his haste to get over on the other side." I suppose, however, the fence is still left. Being left friendless and arenaless, how am I to make any further struggle, with only a fence as a field on which to operate? Hardly worth while to try.

After he has smashed the arena, leaving me dangling on the fence, he apparently fits up another arena on which to knock me out as to Nature's plan and things "along that line" in spring. Allow me to ask here, by way of parenthesis, friend Doolittle, whether you think it's just the right thing, when the editor agreed to furnish "the arena," for you to smash his property without paying damages for the same.

I raised the question whether Nature's plan was wrong, and now you raise the question whether I have the right conception of what is Nature's plan. I hadn't supposed there would be any dispute between us as to what is meant by Nature's plan, but I'm not so sure of it now. By Nature's plan I meant what the bees would do if left to themselves without any interference on the part of the beekeeper.

You ask, "Where are the *first* eggs deposited — in the center of the *cluster*, or on the outside of it?" and then you make me reply, "In the *center*, always." I wish you wouldn't make me say that, for it isn't true. Likely, however, you mean in the spring, in which case the answer is all right. Then you say, "Then that's Nature's way, is it not?" Certainly it's Nature's way to have the *first* eggs there, for that's the only place warm enough at that time; but it isn't Nature's way to lay any more eggs in the center for the next three weeks. It's Nature's way to let those eggs stay right there in the center till they become larvæ and mature bees; and if any intermeddling bee-keeper comes along pulling the frames apart and putting an empty comb in the middle he is making a distinct interference with Nature's plan. It's Nature's plan to lay eggs anywhere in the brood-nest that's warm enough; and I don't need to prove, as you suggest, that the queen would naturally lay the first eggs of the season on the outside of the cluster. It's Nature's plan to lay the *first* eggs of the season in the center, and it's just as much her plan to lay the next further out, and then further still as the brood-nest increases in size. At least, that's the way it's done in colonies left to themselves in Northern Illinois.

Whether interference with Nature's plan is a good thing or not is another question. I don't know. In your hands it may be all right. If beginners are advised to spread brood, in most cases I suspect the results would be mischievous.

Returning to the matter of entrances, you say you tried ten with entrances 1½ inches deep, and ten with ½-inch entrances. It would have been more to the point if you had tried the four blocks; but as far as you went the proof was in the direction of establishing the fact that, the larger the entrance, the more swarming. It would have been more satisfactory if you had given us the result as to the remainder; for if the three you mention were the only ones that swarmed with the large entrances, and the other ten all swarmed later, then the sum total of the proof lies on the other side. But you certainly can not expect to establish a general principle on the say-so of those three colonies.

My observation agrees with yours, that bees with a large entrance either alight directly on the cluster or else run along the floor till they strike near the center of the cluster.

Yes, distinctly I understand that fanning cools me, and that it's hotter on a sultry day when the train stops; but I don't see what that has to do with the question, unless you mean that bees cool their hives by fanning—a thing I never thought of disputing. But if you want me to believe that they can do better work fanning with a small than a large entrance, you must offer some proof other than the bare assertion. I don't say I know you're wrong, but I'd like to know you're right. If the bees can take in air at an entrance half an inch deep, and then by good engineering drive it out through the same opening, I don't see why they couldn't do it a little more easily with a deeper entrance, or with an entrance all around.

You say the sections immediately above the large entrance were slower in being finished, and cite my objection to upper back entrances as explaining why. I suppose because cooler; and if it's cooler for the sections, isn't it cooler for the bees? And if cooler at the top of the hive in front, doesn't that help to make it cooler all through the hive?

I made some tests with the thermometer. Except as to one point, I don't know that they do any thing to help settle the question; but it may be of interest to report them. I tacked on a strip over the entrance to a hive, making it not more than ½ inch deep, and I stuffed a roll of rags into the other three sides, alternately trying a thermometer with these three sides open and shut. Putting the thermometer on the bottom-board, with the sides all open, the temperature, Aug. 25, 9:15 A. M., was 87°, while outdoors it was 73°. At 9:45, with sides shut, it was 89°. At 10 it was 84½° open; at 10:30, still open, 79½. This lowering of temperature was, likely, owing to the larger number of bees being afield, leaving the cluster less dense below. At 10:50, shut, the temperature was 91°, the outdoor air being about 15° lower.

This shows that closing the sides made the hive warmer, but there may be nothing conclusive about it. The weather was not hot, and the temperature in the upper part of the hive may not have acted as it did below.

In the afternoon, the outside air being about 80°, the thermometer was placed on top of the brood-frames. At 1:25 P. M., with the sides shut, the thermometer stood at 90°; at 2, open, 91°; at 2:30, shut, 92½°; at 2:50, open, 92½°; at 4:55, shut, 91°; at 5:20, open, 91°.

Now, if you can draw any satisfactory conclusion from that, you can do better than I can. At 2:30, with the sides shut, it was 1½° warmer than when open half an hour earlier—clear proof that it's warmer with the sides closed. But at 2 it was 1° warmer with the sides open than 45 minutes earlier with the sides shut — clear proof that it's warmer with sides open.

Aug. 30 was hot—91° in the shade. With the thermometer on the top-bars I took observations every 15 minutes, beginning at 2 P. M., having the sides alternately closed and open. The result was as follows: Shut, 96½°; open, 97; shut, 98½: open, 99½; shut, 99½; open, 99; shut, 98½; open 98; shut, 97½; open, 97. The outer temperature had gone down to only 90° at the last observation, and it looks very much as if some other influence or influences were at work controlling the temperature, without paying much attention to whether the sides were open or shut.

Sept. 1 was another hot day, and I dropped the bulb of the thermometer into the middle of the brood-nest. Result was no more satisfactory. Temperature was lower in middle of brood-nest, however, the highest being 97°, at which it stood at 11 o'clock, whether the sides were open or shut. The outer air was then 88°; and when it went up to 91 outside, it went down to 95 inside at 2 P. M., then rose to 96 at 2:25.

Evidently, it isn't an easy thing to prove any thing by the thermometer — at least, for me to do so; and I may as well say frankly that I supposed it would do a good deal to settle the question. Just as frankly I may say that I wish, Bro. Doolittle, that you could give clear proof that your view is right. I'd be glad to believe it, for it's some trouble to hoist a hive on blocks, and would be a good deal easier, and in some respects pleasanter, if the hives could remain unchanged throughout the season. But I can not believe that it is easier for the bees to change the air with a small entrance than with it open all around. If there were a hole at some other place, so that the air were forced through, something on the principle of a tube, then I could easily believe that any side opening might spoil the tube. But in the present case there's nothing of the kind. The air is driven out at the same place where it is drawn in, and I can't see why it wouldn't be easier to drive out the air at some other place.

Your three swarms are good argument so far as they go, but others say differently. If I remember correctly, Rev. W. P. Faylor says he has no swarms with his hives blocked up, but does have them otherwise.

You say that in extreme heat you had larger clusters outside with the large than with the small entrance. Yesterday, Sept. 2, was an extremely hot day. At the Wilson apiary, part of the hives were raised on blocks, and part had the bottom-boards reversed, with more room under the hive, and a larger entrance, but the sides and back part closed. My assistant called my attention to the fact that those with the sides and back closed were about the only ones hanging out, notwithstanding they were less crowded for room inside. Can it be that your bees and mine are prejudiced by our own views? or do we both look through colored glasses? I may say that, when I tried having the sides and back open and shut, the same colony showed little difference in the matter of hanging out.

You say the bees don't get outside because it's cooler, but to get out of the way of the fanners, "for in reality it is cooler inside." That's a point there ought to be no difficulty in settling with the thermometer. So far as I have tried it, the temperature was always five, ten, or more degrees higher in the hive than outside. When it was 99° on top of the brood-frames, it was only 91° outside. The only case in which your statement could be correct would be with the sun shining directly on the outside cluster; but I think you will find that the outside air is always cooler than the air in the hive. How could it be otherwise? The fanners are always bringing in air from the outside, and the activity of the bees produces heat, not cold. So the air is made hotter and not colder. If the outside air were hotter, the fanners might stop their work, so far as heat is concerned.

You wonder if I ever heard of sections melting down where there was not sufficient ventilation. Yes, I have; and if the outside air were not cooler, ventilation would not help the case any. I hope this whole question will be so thoroughly ventilated that it will no longer remain a question.

Marengo, Ill. C. C. Miller.

[G. M. Doolittle replies.]

Dr. Miller kindly sent me the above, and thus I have a chance to say what I wish in reply, and then this matter can be closed up in one number. As my time is very limited just now, what I say must be brief. About that "arena," I don't like to "fight," anyway, and I thought that the best way to stop the fight was to "smash the arena;" then if the editor wants damages let him charge it up to Doolittle, Miller & Co. But "I don't know" that the smashing of the arena will stop the fight, for I see that the peaceful doctor can fight to fully as good advantage "dangling from a fence" as he could in the whole spacious arena. But *I'm bound* to stop the fight, and so with a few parting words "I'll hie me away" from both the fence and the spot where once stood the glorious (?) arena.

As to Nature's plan of brood-rearing, I shall still hold that, where the queen will deposit eggs *every time*, right in the center of the cluster of bees, unless that center is occupied with something else, that is Nature's plan for egg-laying, Nature telling the queen "to deposit her eggs where it is the most conducive to their comfort; and when it comes about, by an expansion of the brood, that just the right thing can not be done, then do just as nearly right as circumstances will allow." I think that even Dr. M. can see this point, so I will not enlarge further upon it. Allow me to add, however, that, when no brood or honey is in the way, any queen always lays her eggs in the center of the cluster of bees, whether the queen is young or old, or whether the season is early spring or late summer, according to all of my observations.

As to large entrances: Dr. M. says, "It would have been more to the point if you had tried the four blocks. Perhaps it would; but why should I try them over again, when I told you that was tried years ago and found wanting? Then there was the Weeks hive, with its swinging bottom-board, which, by means of a button, caused the bottom of the hive to be shut, all but an entrance ½ by 3 inches, at all times but in summer, when, by turning the button again, the bottom-board was suspended by four wire hooks 2½ inches from the hive. This, and hives raised on inch blocks at the four corners, were tried, with hives having only ½-inch-deep entrances, by the whole length of one side of the hive; and the summing-up of the season's work proved neither of the former superior to the latter as to amount of dollars and cents produced, or as to non-swarming success. Then why should I go all over the ground again that I might be "more to the point"?

About the "say-so" of the three colonies which had large entrances, and swarmed before any of the other seventeen tried to prove which was better as a non-swarming device, the Pettit system or the common entrance, allow me to say that it happened thus: Before I expected any swarms at the out-apiary, the man owning the ground on which the bees stood informed me that the bees had commenced swarming, three swarms having issued. I had told him to mark the hives which swarmed (the queens had their wings clipped, so swarms could not go off), and when I went to look after the matter the three hives marked were of the ten with the large entrances. I then went through the whole twenty to stop all swarming, and found that all of the other 17 had made preparations for swarming, but the three which got the start of all the rest were those with the *large* entrances. I don't claim that large entrances *promote* swarming, but I do *claim* that they do not *retard* swarming, much less tend toward *non-swarming*, and this claim is based on years of experience with both.

Now, Dr. M., I don't know that I can prove any such thing, consequently am not going to try; but from the hours I have lain beside hives with swinging bottom-boards and those with large entrances, and seen the lack of "fanners" at work, unless those fanners were away up in the hive, I have formed the opinion that the fanners could do more effectual work at the half-inch entrance than they could where they had all outdoors to send a "current of air through."

I am very glad indeed to get your tests with the thermometer; and while they do not prove very much to sustain either your side or mine, one thing they do prove, which is that at *no* time did the heat inside of the hive get very much above that which is very *comfortable* for the bees. You ask how I know. Well, don't you remember those experiments I tried, to get at the right temperature for brood-rearing, and how, on one morning, when there was frost on the ground I found the temperature in the brood-nest to be from 95 to 97°, and in all of the tests made that the range in the brood-nest was from 94 to 98°? And here we have been having a whole great big "arena" fight, with the ground all covered with "fur and blood," all for the sake of something under which the bees are very comfortable, and that which they maintain, even on a morning when the frost is on the ground.

And now, asking your pardon, doctor, for any thing I have said or done which may appear to any looker-on as ungentlemanly or unseemly, I wish to say that, after spending weeks, were the time all put together, and perhaps months, in raising hives and putting them down again, and hours of thought on this matter of more ventilation and larger entrances, the bees have told me by the *products* they have made, that, over and above a half-inch entrance the whole length of the hive, not one pound more honey will be produced, for the average of honey taken with such entrances has been fully equal to that taken with any larger entrances. This being so, I have come to the conclusion that you and others may continue raising hives on four blocks, use the Pettit wedges, yea, suspend your hives in "mid-heavens," for the fun of it, or from any theory advanced; but as for Doolittle, he'd rather spend the time in something more profitable; for it has come to such a pass with me that I care not whether the bees hang out or whether they are all in the hive, so long as I know that they have sufficient room in the surplus arrangement to store all the nectar that comes from the field; for as they do as well for me under these circumstances as under any other, why should I waste any further time on questions that have no important bearing on our pursuit? Therefore I leave the further discussion of these subjects to you and others, and will turn my attention to things which have more importance, as I consider them.

Borodino, N. Y. G. M. DOOLITTLE.

[The recorded temperature in the hive, contrary to what we might expect, proves very little either way; but I will venture to say that, on a very hot day, the fanners will be harder at work in front of a small entrance than in front of a large one. Say the temperature outside is 110, it takes *energy* to keep the air inside of the hive circulating, and that energy will be proportioned somewhat according to the size of the entrance. Suppose, for instance, instead of having a regulation-sized entrance, it were reduced to a space sufficient to admit one bee at a time. Does it not stand to reason that the fanners would have to work very much harder? Indeed, this small entrance would set up a friction that would result in raising the temperature of the hive beyond a safe point for the combs.

In setting up engines it is always necessary to give a large and free exhaust. If the exhaust-pipe is too small it pinches the exhaust and causes back pressure and friction. If it is large and free, then the exhaust comes as a mere breath. So with a hive of bees. The entrance is the exhaust-pipe; the bees are the engine, or source of energy; and the current of air from the fanners is the exhaust.

With a large entrance, the volume of air can be handled with less fanning and less friction than with a small one; and the very fact that the bees will cluster out more with a half-inch entrance than with one of one or two inches, goes to show to my mind that a hive with an ample opening can be kept cooler, and, consequently, the bees stay inside. When a colony clusters out for several days in succession, I generally expect a swarm.—ED.]

* * *

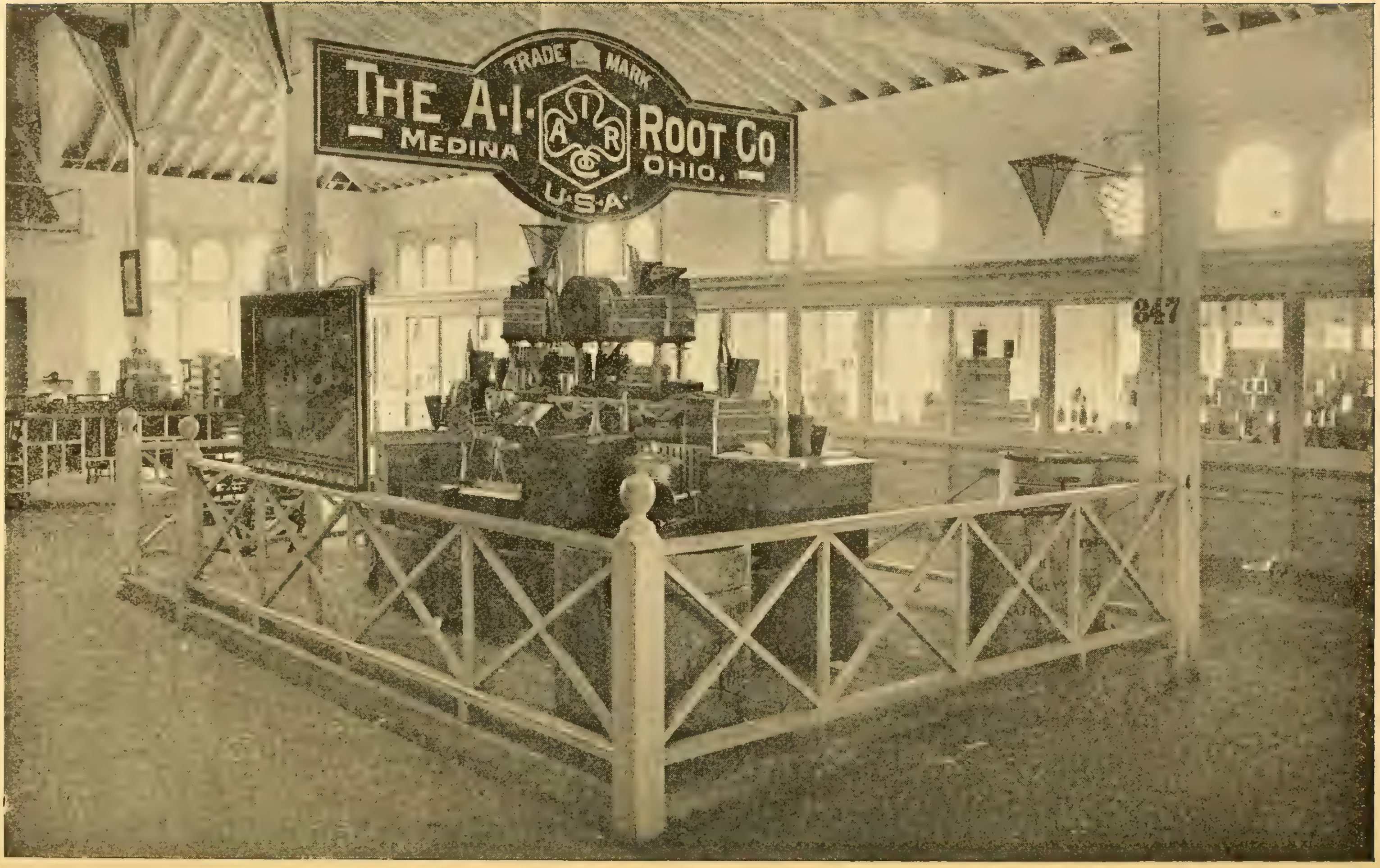
HOW I MANAGE MY APIARY.

An Ideal Railway Apiary.

BY F. E. BROWN.

To start with I will describe the home apiary with its arrangements. We will first go out and see the way the bees are arranged. We find them all in one long double row, about 5 feet apart, and the bees placed upon scaffolds which raise them about 12 inches from the ground. The hives are spaced in the row about 2 ft. apart, and the direction of the row is from north to south, with a row of shade-trees planted just in front of the west row of the double one, thus forming a perfect shade for the bees in the heat of the day, while in the morning till about 10 o'clock they are exposed to the sun. This, I find, is very beneficial in this climate (where we have quite cool nights), as it serves to get the little fellows out to work earlier in the morning; and when the honey is quite plentiful it does me good to see them work hard early and late.

As there are some 200 colonies in this apiary usually, placing them all in two rows makes the ones that are furthest from the honey-house some distance away; and in order to overcome this objection a track is put down between the rows, and a car placed upon it; and as I am now going to commence to extract I will invite the reader to go with me to the apiary. You may have a veil if you wish, but it is not necessary, as the bees are not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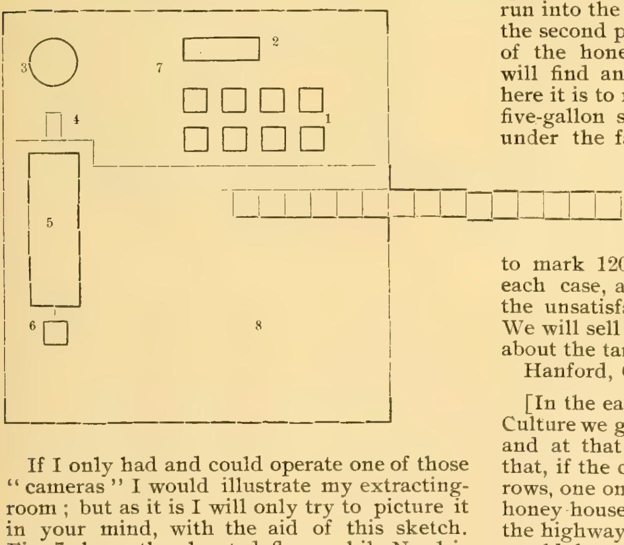
THE A. I. ROOT CO.'S APICULTURAL EXHIBIT AT THE OMAHA EXPOSITION. SEE EDITORIALS.

cross ; so here — you can take the Crane smoker and I will push the car. You will notice, first, here in this drawer in the end of the car I keep my record-book, smoker-fuel, note paper, pencil, and a tack-hammer, pry, and such things as are always needed on such occasions. I use from six to ten honey-carrying boxes. They are to put the frames in to transfer them from the hives to the extracting-room. I simply take a super and tack a tin bottom on it, as it is just the right length as well as the right depth, and the tin bottom serves to keep all drip from getting scattered and daubed about and wasted.

We will now proceed to the further end of the apiary. It will take me about twenty minutes to take off these eight boxes of honey. I very seldom use a brush, as they shake off very readily.

Now as we have the car loaded we will go to the extracting-room. You will notice that I here have what it would take to make about four wheelbarrow loads ; and it is no harder to handle, and much more convenient. Hold on, friend ! you don't need to go ahead to open the door, as you will see that it will open of its own accord as the car approaches. It opens to the outside ; and as the car passes inside it closes very fast ; and as there is no stopping or slacking the speed of the car, the bees that were following up in quest of their goods are quickly cut off. Now I will unload, and place the boxes of honey on this platform that is elevated to the level of the top of the car ; then another set of boxes is placed on the car, and the man who takes off the honey is sent back to the apiary while we attend to this load that was just brought in.

Elevated Floor.



If I only had and could operate one of those "cameras" I would illustrate my extracting-room ; but as it is I will only try to picture it in your mind, with the aid of this sketch. Fig. 7 shows the elevated floor, while No. 1 is the boxes of honey that have just been unloaded. Between 1 and 2 stands Miss Hoover, the one who wields the uncapping-knife with great speed. Fig. 2 is an uncapping-tank, which is made of wood sides, and ends with a tin bottom ; and just above, and resting on the bottom is a frame that is the same size as the inside of the tank, and on the frame is fastened a wire screen, and the caps fall on this screen as fast as they are clipped off. You see they have a chance to drain all the time. At one end of the tank, in the bottom, is an opening that the honey runs out of into an open-top five-gallon can as fast as it drains from the caps. After they are uncapped they are hung by the projections of the top-bars of the frame in one end of the uncapping-tank, as the width corresponds with the length of the frame.

Fig. 3 is a Cowan four-frame extractor. The man who runs this machine stands between it and the uncapping-tank, and can very easily reach the uncapped frames from his position, and pass them in to the extractor, where the honey is extracted, and runs as fast into the strainer, Fig. 4. This is made of wood or metal, a box 14x22 inches, and 10 inches deep. It has two partitions which serve as a separator. The first partition is within 4 inches of the end nearest to the extractor. It is made fast to the bottom, but it lacks 2 inches of coming to the top of the box. The honey falls down into this small compartment, and then it will rise up to the top and run over into the middle room of the strainer. The second partition is placed within 4 inches of the other end of the box, and it will lack one inch of coming down to the bottom. Thus the honey, in coming from the extractor, will plunge down with force into the first part, and it will then rise and bring all the wax with it to the top in order to get over into the second space. The wax and all foreign substances will remain to float on top in this large or middle space, while the honey will be compelled to run into the third or last space through under the second partition, and then up to the level of the honey in the middle space, where it will find an exit into the tank Fig. 5, and here it is to remain until ripe. Then I place a five-gallon square can on the scales, Fig. 6, under the faucet of the tank, and begin to draw the honey ; so when the scale will tip at 60 lbs. net I shut down and change the cans. Thus the honey is all weighed, and it will be ready to mark 120 net, which should be put on each case, and then this will do away with the unsatisfactory way of adjusting the tare. We will sell only the honey, and say nothing about the tare.

Hanford, Cal.

[In the earlier editions of our A B C of Bee Culture we gave a view of a "railway apiary," and at that time called attention to the fact that, if the colonies could be arranged in long rows, one on each side of the railway, with the honey-house and shop as one terminus and the highway as the other terminus, conditions would be very nearly ideal. I am sorry we have not a photo of Mr. Brown's apiary ; but it is substantially like what I have just described.

In our old original home apiary we had a railway running from the honey-house to the road ; and the year that we produced such a large crop of honey, the barrels of extracted were put on the car, run out to the roadway, and rolled from the car on to the wagon. The scheme worked very nicely. There were also times when the extractor was put on the car, and the honey was extracted from the combs almost as soon as they were taken from the hive. Thus many steps, and the carting of many combs to and fro, were saved.—Ed.]

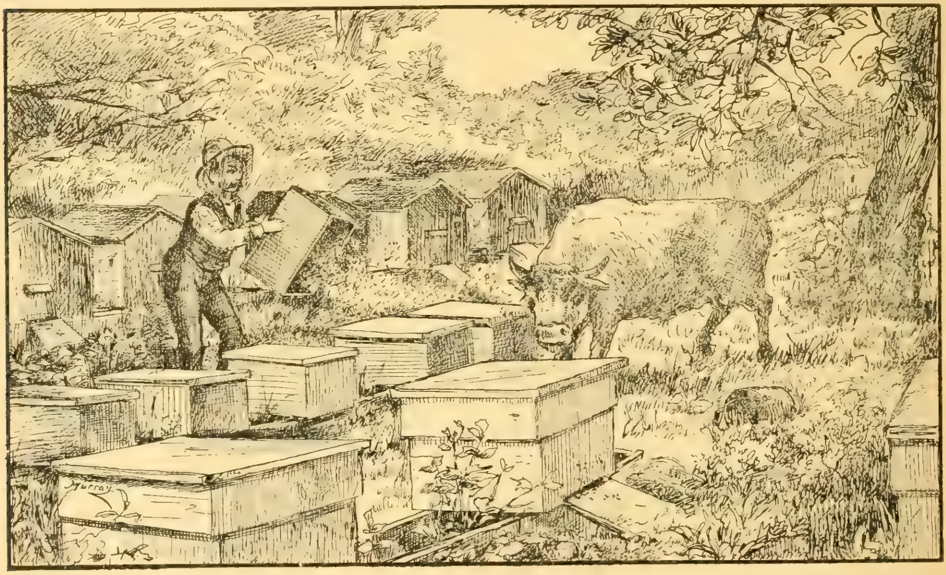
* * *

WHICH IS MIGHTIER, THE BEE OR THE BULL?

The Advantage of the "Kick Method" of Taking off Supers.

BY HARRY S. HOWE.

One day recently, Mr. W. L. Coggshall started on one of his regular "bee-expeditions." When he left home he declared his intention of seeing the Varna yard; but the fates willed it otherwise, for on the way he decided to go to the Ellis yard. Here again the hand of fate made itself manifest. Seeing some wintergreen by the side of the road on the way through Ringwood, he stopped to get some, a proceeding to which Dandy, the colt, objected. When La Mar went to get into the buggy, Dandy promptly turned around and tipped the whole outfit over. La Mar, with equal promptness, tipped it back again and proceeded to munch his wintergreen. As a result of the upset, or perhaps in spite of it, he again changed his route, with the result of landing at the Forest Home yard. This yard is situated in an orchard, on one corner of a partially abandoned farm. To get to it he had to ford a large creek, and then go quite a way to where the bees were. The present owner of the farm, which is about one and a half miles from Cornell University, uses it for pasture. All of the fences and buildings have long since gone out of business. When La Mar got to where the buildings used to stand he turned Dandy loose and started for the bee-house. A large bull that was pasturing there also started in the same direction, and then the circus began.



THE MAN, THE BEES, AND THE BULL.

Niver thinks the trouble was all caused by La Mar's reading so much of the Spanish way of doing that he wanted to have a bull-fight of his own. Others incline to the theory that some one had dropped a "yellow journal" in the pasture, and that the bull was the one who was affected by so much war news. Be the cause what it may, the bull soon began to make up faces, and to kick up the grass. Then he raised up his voice and began to utter the most "terrorable" threats. La Mar says that this particular fellow had the loudest voice he ever heard. But then, La Mar is not a good judge of music; and, besides, he was pretty busy thinking how long he might have to stay if he got "treed," and in remembering that he always got nervous when he was up so high.

The "other fellow," about this time, got his feelings up to the point where he could not keep his feet all on the ground at once, and his voice, from its nearness, sounded as though he had got a fog-horn stuck in his throat. Another point that La Mar began to notice rather plainly was that the bull's breath was not particularly sweet, and that his eyes were rather blood-shot. Not wishing to offend his visitor, but still wishing to be alone with his thoughts, La Mar, like the Irishman in the story, tried various hints, none of which the bull seemed to think were intended for him.

Some way he was so intent upon his own troubles that he did not notice that the sticks and stones were intended for him, so the hints were entirely wasted. Just as things were beginning to assume a "blue" appearance before his eyes, La Mar backed in among the bee-hives. The bull, thinking that he had dallied long enough, and that the time for decisive action had come, made a rush for La Mar.

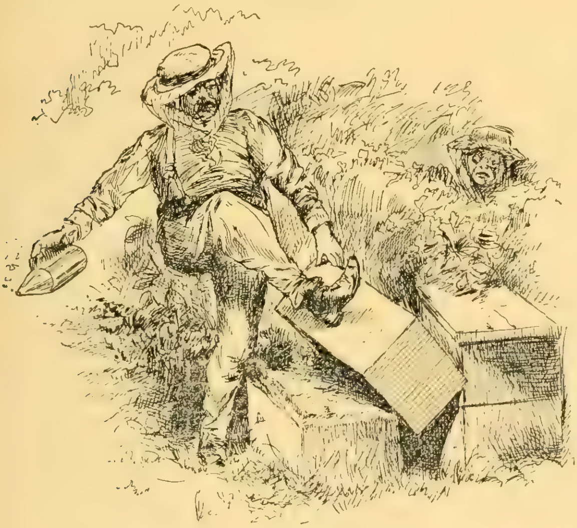
Alas for his plans! La Mar's ruling passion was strong, even in the presence of the bull, and he kicked one of the hives loose from the bottom-board, with one of those never-failing side kicks; then, picking up the hive, he shook the bees full in the bull's face.

On the way home, La Mar was telling of his adventures when he was asked if he was stung.

"I don't remember," he said, "but it is more than likely that I was."

"How did the bull like this reception?"

"He didn't seem to like it very much. The last I saw of him he was off by himself rubbing his nose on the ground, and seeming to feel bad about something."



COGGSHALL'S FAMOUS KICK (DIRECT FROM PHOTOGRAPH).

"I don't wonder at that."

La Mar was not satisfied with the fun he had that trip. The next time he went to that yard, what did he do but take along an innocent amateur photographer, who was on the search for interesting subjects to photograph. La Mar showed him a way of getting to the bees from behind, and told him to aim his camera at the front row of hives, and wait for his subject. This he did.

Soon there came a terrific bellowing, a tramping of feet, a shout of "Look out!" and the scene of the previous week was repeated before the astonished eyes of that photographer, who had barely a chance to "press the button" before the bull had again gone to nurse his wrath and a mouthful of bees, in the seclusion of the far corner of the farm.

As for the photographer, he suddenly lost all interest in scenes and scenery. His thoughts were about equally divided between wondering whether the camera would get the bull or the bull the camera, and wondering where those bees would get him next.

West Groton, N. Y.

[See editorials. In addition to what is there said, I will merely state that the chap over in the bushes probably looks a good deal as I did when I saw Mr. Coggshall give his first professional kick.—ED.]

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

HOW TO MAKE SUGAR SYRUP FOR FEEDING BEES.

Question.—Please tell us in the October 15th issue of GLEANINGS how to make sugar syrup for feeding bees, as mine are short of stores, and I must feed them for winter, on sugar. Don't refer me to some back number, for I have lent many of my GLEANINGS; and should the number be at home, I do not know just where I may find it.

Answer.—When at a bee convention ten or more years ago I was sitting by the side of Thos. G. Newman, when some one got up and requested that Bro. Doolittle give the convention his ideas on a certain subject on which I had written an article, only a short time before, for both GLEANINGS and the *American Bee Journal.* I turned to Mr. Newman and asked him if I should tell the gentleman that he would find all I knew on the matter in such and such numbers of the *American Bee Journal* and GLEANINGS. His reply was, "No. Give it over to the convention, for it is the 'continual dropping that wears away the rock;' and after people are told over and over again, they will remember what they do not 'catch on to' at first." And this little incident has been forced to my mind "over and over again" during the past two weeks, for there has been no subject which I have given in print so many times as I have my formula for making sugar syrup for feeding bees, and yet scarcely a mail has arrived during the last two weeks but has brought from one to three letters requesting that I tell *privately* how to make "sugar syrup for feeding bees." And so it comes about that I am really glad that some one wants to know about this matter publicly, even if I have to repeat what I have ofen said, for the private correspondence may be lessened a little by a public article on the subject.

This rush of correspondence on the feeding problem is undoubtedly owing to the poorness of the past season in most localities, and I know what it means to have a lot of starving colonies, or nearly so, on hand at the close of the last flowers that yield honey; and I remember with what anxiety I once looked over the bee-papers to find how the bees could be fed on sugar so they would winter as well as though they had plenty of natural stores in the hives. In thus looking over the papers one of them told me that all I had to do was to pour boiling water on sugar, and stir it, when it would be ready to feed as soon as cool enough, so that the bees would not be burned by it. As this was the most simple of all the plans I had ever seen, and required but little work, I thought best to try it. The feeders which I use are known as "division-board" feeders, they being to my liking, as they can be left in the hive when not in use, if I wish, till it is convenient to take them out. As these feeders allow the bees to go inside of them, there would, of course, after they had been once filled, be more or less bees in them when the feed was poured in the second night. It is known by all that, if honey is poured on bees, it does them no more harm than water poured on a duck's back, providing the bees do not drown in the honey; so I could not see any impropriety in turning the feed on them just the same as I would honey.

All went well the first night; but when I came to go to the syrup the next night I found it skimmed over with a thin crust of sugar which had formed on the syrup during the twenty-four hours it had been standing. However, I persisted in feeding it, as the one recommending this way said that syrup thus made needed no cream of tartar or vinegar in it, till one day I noticed bees out at the entrance, of each hive fed, in large numbers, having little grains of sugar on their wings and bodies, where the syrup had crystallized on them. I now looked inside of the hive, when I found that nearly one-fourth of the bees had more or less of these sugar crystals on them, while the inside of the feeders was all covered with them. Upon looking into the cells containing the syrup I found that, in many of them, crystallization had commenced to such an extent that the crystals were easily seen. As I had read of sugar syrup crystallizing solid in the cells I thought it time to call a halt; so when the next batch of syrup was boiled I put vinegar into the water before the sugar was added. This seemed to help much about the crystallization, but it gave a taste to the syrup which it seemed to me would be unpleasant to the bees; so in the next I tried cream of tartar, then tartaric acid; but with any of them the syrup would crystallize some unless I added so much that a disagreeable taste was the result.

While studying on the matter it came to me that, years ago, during some experiments made to prevent honey from granulating, I had used sugar syrup in one of these experiments, which syrup had accomplished the desired end of keeping the honey liquid when cold weather came. I was not long in reasoning that, if sugar syrup would keep honey from granulating, honey must keep sugar syrup from crystallizing. So the next batch of syrup was made as follows:

Fifteen pounds of water was weighed out and put into a tin vessel of suitable size. This was now placed over the fire, and brought to a boil, when thirty pounds of granulated sugar was poured in, stirring all briskly while putting in, so that the sugar would not settle to the bottom, and burn, as such sugar is sometimes liable to do if not stirred in. This stirring is kept up till the sugar is pretty nearly all dissolved, when the whole is left over the fire till it boils again, when it is skimmed, should any scum or impurities arise. It was then taken from the fire, when five pounds of good extracted honey was poured in and stirred for a moment or two, till the whole was thoroughly mixed. This honey proved to be just what was needed, for syrup thus made remained liquid day after day when not fed to the bees immediately; and, even after keeping it several months, by way of experiment, it was found to be as good as ever. Thus I had a feed that is easily made, the whole giving me 50 pounds of feed of about the consistency of honey, none of which has ever crystallized a particle, although I have now used this feed, whenever required, for nearly a quarter of a century.

I trust the readers will pardon me for going over the ground so fully, and I have done so only because some are still claiming that all that is necessary to make a good feed is to pour boiling water on sugar. As I know this to be a fallacy, I thought best to go again over the ground I have traveled, so that no one would be tempted to try the boiling-water plan in making feed, unless such desire to do so by way of experiment.

[While no doubt Mr. Doolittle's plan will make a syrup that will not crystallize, it seems to me there is a simpler plan, and one that can be pursued by the average beginner with less danger of failure. As a general rule, sugar and water, according to our experience, should be mixed in the porportion of one part of water to one of sugar, either by bulk or weight. If, on the other hand, there be used, instead, two parts of sugar to one of water, it will be necessary to do very thorough cooking, run the risk of burning the syrup, and, in addition, use some sort of acid, or honey, to prevent granulation. Our method of making sugar syrup, and one we have used for two seasons with success, is to fill an ordinary honey-extractor about half full of water. Start the reel to going, and then add the sugar gradually until there is enough to equal the bulk of the water. The extractor is turned vigorously until the sugar is all dissolved. For a short time after stirring, it will look as if it were still undissolved, owing to the small air-bubbles. But these bubbles will disappear after the syrup has been allowed to stand for a time. By this plan there is no need of adding acid or honey; no cooking, and, consequently, no danger of burning; and when the bees have ripened or thickened this half-and-half syrup, they have a better product in the hive, to my notion, than if we were to give them syrup and water of the consistency of ripened honey.

When I visited Dr. Miller recently he did not think it necessary even to dissolve the sugar in the water. He simply poured cold water on the sugar in the feeder. After stirring it a little, perhaps, he lets it stand for the bees to take up. If there is still sugar left in the bottom of the feeder at the next round he pours in more water. The point is right here: If we give the bees *thin* syrup there will be no danger of its granulating or crystallizing in the combs after they have manipulated it, and perhaps put in formic acid. If one does not have an extractor, let him pour the ingredients into a tub, and stir with a stick.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

ANOTHER VICTORY FOR THE OLD UNION.

The enemies of the pursuit of bee-keeping have again been defeated. It will be remembered that, about one year ago, Mr. Frank S. Buchheim, of Santa Ana, Cal., was arrested, under Sec. 370 of the Penal Code of California, for keeping 100 colonies of bees on his premises, charging him with keeping a nuisance in the neighborhood, averring that the bees ate up and destroyed the fruit belonging to the neighbors, and interfered with laborers who were engaged in caring for the fruit, etc. His apiary and premises cover 7½ acres. He built a fence 6 feet high to inclose 24 x 32 feet, in which he kept the hives of bees during the fruit-drying season, thus controlling the bees and preventing annoyance to the neighbors. But they were not satisfied with these precautions, and demanded that the bees be moved out of that locality. Suit was brought against Mr. Buchheim for maintaining a public nuisance, and he was fined $50.00 and costs. As he was a poor man with a large family to support, he did not pay the fine, and was committed to jail for 25 days. After 10 days had elapsed, an appeal was taken to the Supreme Court and he was released, pending appeal. In the Superior Court, Judge Ballard ruled on the appeal that the complaint was insufficient to constitute a public offense, and entered a judgment discharging the defendant and exonerating his bail.

The enemies of bee-keeping, not being satisfied with this, instituted another suit against Mr. Buchheim, and, through the efforts of the National Bee-keepers' Union assisting the attorneys for Mr. Buchheim, and paying a portion of the court fees necessary for the defense, they have failed to obtain a verdict against him, though the jury wrestled all night long with the case. At first they stood seven for acquittal and five for conviction, in a community led by a justice of the peace, and organized to persecute Mr. Buchheim, because of his keeping bees successfully and profitably. This is another victory for the National Bee-keepers' Union, and bee-keepers all over the continent will be delighted to learn the facts in the case. THOS. G. NEWMAN,

General Manager N. B. K. U.

San Francisco, Cal.

HONEY-DEW FOR WINTER STORES.

Mr. E. R. Root:—In your editorial on honey dew, on p. 590, you advise bee-keepers to leave it in their hives for winter stores. The professional bee-keeper, having individual ideas on the subject, will read your editorial, assimilate what is useful, but will use his judgment according to locality, nature of the honey-dew, etc. The young bee-keeper, or the man with few stands, however, uses less judgment, or altogether lacks experience, and is very apt to follow to the letter some light in the bee-keeping world, without judgment as applied to the individual case.

In this locality our bees bring in at times, during the summer, a honey-dew derived from insects found on the box-elder. In flavor it has a combination of tastes, none of which I can describe except as having a distinctly sour flavor. In one of my apiaries the bees gather a good deal of this stuff; and, when they have no other honey to use, it has a distinctly injurious effect on many of the colonies, although depending upon it but a few weeks, and in the summer season.

Four or five years ago more than half the bees in this county died. The summer preceding had been poor, and the bees filled up almost entirely on honey-dew. In Preston and a few other localities the bees stored partly with real honey, and came through fairly well. As for my own bees, I extracted from the body of the hives, and when September came they were very light, and were fed up almost entirely on sugar syrup, and I lost only one hive of them.

I bought quite a number of colonies that fall. All of them had honey-dew stores. I prepared them for winter in good condition, placed them in the same cellar with the others, and only one lived. The bees died without any mold or dampness in the hives, except that the honey had fermented, and that caused dampness on the frames containing the honey. The number of such dead colonies examined was about fifty.

Last year honey-dew in this locality had about the appearance and taste of sorghum, and it was gathered from poplars. It fermented quickly; season of yield, June. The trees were free of insects. This year we have had more or less honey-dew all through the season. Some of it is very dark; some is lighter, and very similar in taste to a very good quality of glucose syrup. M. V. FACEY.

Preston, Fillmore Co., Minn.

WHY THAT HONEY WAS DARKER.

I give it as my opinion that the separators had nothing to do with the color of Mr. Golden's darker honey, unless, possibly, in this hive they were tin instead of wood, which might have made more travel-stain. It could easily have been caused by darker combs in brood-chamber. Take very white honey, and press cappings down until they touch the honey, and it will have the darker appearance of that made by colonies which fill their cells too full of equally white nectar. Every once in a while I get a super that has to go one grade lower because the cappings are tight against the honey. G. K. HUBBARD.

Riverside, Cal., Sept. 26.

EDITORIAL BY E. R. ROOT

THE BEST WAY TO UNITE WEAK COLONIES FOR WINTER.

A GOOD way to double up weak colonies in the fall is to unite them with stocks brought from the out-yard. It often does little or no good to unite nuclei both from the same yard; but results are very different when the two lots of bees come from *separate* yards, for then there is no going back of one lot of bees to their old homes. We are about to practice this plan at our home apiary when we bring in the out bees.

THE NAUGHTY JUTTY CORNERS IN THE ORDINARY ONE-PIECE SECTION.

BYRON WALKER, when visiting us, drew my attention to the fact that the ordinary old-style scored-out one-piece sections filled with honey are much more liable to gouge into the face of the combs in ordinary handling, such as, for instance, putting in and removing from the shipping-case, than the ordinary four-piece section. The latter has no jutty corner—nothing but the widened ends. Mr. Walker says he greatly prefers the one-piece section with its openings at top and bottom reaching clear out to the sides, the same as in the four-piece box.

A correspondent just calls my attention to the fact that the plain section is better than either of the two above mentioned, for there are no corners or edges that project beyond the other parts of the box. For that reason the section can be slid in and out of the shipping-cases and hive supers without marring the face of the comb.

HIVES SHORT OF STORES FOR WINTER.

THERE is every reason to believe that, owing to the poor honey crop this year, there will be a scarcity of stores in the hives for winter. Many bee-keepers, whenever a failure of honey occurs, will philosophize something after this fashion: "Them bees didn't get me no honey this year. If they can not pay for theirselves, I guess I'll let 'em go Gallagher." And they do. Another class, also forgetting the big crop of last season, and being too busy with their other work on the farm, will just simply neglect the bees. It did no harm to let them go last season, because there was plenty of honey in the hives; so in a half-hearted way they "guess" there is enough in them this fall. At all events, they are too busy; and if the bees die — well, perhaps they will buy more next season.

The careful, provident bee-keeper knows perfectly well that it is very unwise to let bees shift for themselves at any time; and there is scarcely one who looks back over the past who will begrudge sugar fed that the bees did not earn that season, but perhaps may earn next year or some time in the future.

Editor Holtermann, of the *Canadian Bee Journal*, sounds a similar note of warning, and I am sure it is needed.

A GOOD HONEY YEAR IN CANADA, AND A POOR ONE IN THE UNITED STATES; WHY THIS DIFFERENCE?

MR. R. F. HOLTERMANN, who made us a short visit on the 7th inst., reports that the bee-keepers of Canada have had a most excellent season. The year throughout the United States, excepting Colorado, Florida, Vermont, Michigan, and Northern California, has been a most signal failure. Now, why should Canada, so near us, have a good honey-flow, when we here in the United States have had almost the opposite? I remember last summer, when clover ought to begin to yield, we had been having quite a spell of dry weather. Day after day went by, but no rain. Finally when it did come, and copiously too, we hoped, but hoped in vain, that the long-expected nectar would come. While these copious rains seemed to be general over the United States, and while they came in time to stimulate general farm crops, it was evident they were *too late* to have any decided effect on the honey crop of the United States—too late, perhaps, by two weeks. Now, why did the bee-keepers of Canada enjoy a good season? This strikes me as a possible explanation: The honey-flows in Canada are anywhere from ten days to two weeks later than in the United States. Assuming that our friends who are north of the line enjoyed those same rains that we did, and at the *same time*, then those same rains came just in time to stimulate nectar secretion in the blossom, but just too late for the United States.

BYRON WALKER, AND HIS TEN APIARIES IN NORTHERN MICHIGAN.

FOLLOWING closely upon the visit of Editor Holtermann, Mr. Byron Walker, of Evart, Mich., stopped off at Medina *en route* for Pittsburg, whither he was going to buy or sell honey. Mr. Walker is not only an extensive producer, but a large buyer of both comb and extracted. During the summer he runs a series of out-yards, and at the present time he has something like ten apiaries. He has known scarcely a failure of honey in all his years of experience. And why? Because he has a good locality near the regions of the willow-herb, and because he is an intelligent and progressive hustler. Indeed, I'm almost afraid he is working himself to death.

After he has harvested his crops, and prepared the bees in his several yards for winter, he makes his headquarters in Chicago, where he markets his honey. When that is all sold he makes a general business of buying and selling. Said I, "Mr. Walker, you come as near being a specialist bee-keeper as any man we have in our ranks."

"I guess that is true," he replied.

It is too bad that Mr. Walker is so busy a man—so busy, in fact, that he scarcely finds time to eat and sleep, much less to write for bee-papers; but very fortunately, W. Z. Hutchinson has already paid him a visit, and has begun to tell in the *Review* something about this rusher of a bee-keeper, who always gets a honey crop. Said Mr. Walker, as he boarded the train, "Now don't go and write me up." I didn't exactly promise; and while I haven't told some things, also to his credit, I couldn't forbear saying what I have said above.

THE A. I. ROOT CO.'S EXHIBIT IN THE APICULTURAL BUILDING OF THE OMAHA EXPOSITION.

ELSEWHERE in this issue will be found an illustration of our exhibit as it appeared in the Apicultural Building at Omaha. It stands very near the center of the building, and surmounting the whole is a large sign made after the pattern of our trademark. Within the inclosure are represented samples of nearly every thing we make in the line of apicultural supplies. At the left, and hanging to one of the posts, is a handsome water-color picture showing our factory and the general manufacturing plant. Just behind the post, in the foreground, stands one of our four-frame ball-bearing Cowan extractors. This is the third ball-bearing extractor we ever made; and the results are so satisfactory from the ease of running that we have decided to make our 1899 machines ball-bearing—that is, the main bearing that supports the reel. From some careful tests we have made, putting two machines of the same capacity and style side by side, and giving the handle of each machine an equal impetus, we found that the machine with the ball bearings would give just about twice as many turns when left to expend its force as the same machine, identically, without the ball bearings.

Close to the post on the right is a No. 15 two-frame Cowan and Dadant uncapping-can. The center of the exhibit is made up of various styles of hives, perforated zinc, smokers, solar wax-extractors, foundation, swarm-catchers, and a dozen and one other things that we make, too numerous to mention. Our thanks are due to Messrs. Whitcomb and Stilson for the very neat and tasty arrangement of the exhibit. When A. I. R. and myself came into the building we felt proud of our exhibit.

GLOVES IN A BEE-YARD.

WHILE visiting at Dr. Miller's I had several little chats with "Em," his sister and helper in the bee-yard. In one of these interviews I mentioned incidentally the great amount of propolis I found in their hives; and then she explained that she always wore gloves, partly because she could work faster, partly because she didn't like the stings, but mostly because she could not stand the nasty, sticky stuff (propolis) on her fingers. She finally brought out her gloves with their long sleeves. These gloves were made of hogskin — "horrible-smelling things," she said, when new; but after they had been used for a time they lost their porcine odor. On the greaves of the gloves are sewn long sleeves, the opposite ends of which, when put on, are fastened to the shoulders.

"Why," said I, "how can you pick up queens?"

"I don't do it," said she. "I call Dr. Miller after I find the queen. He comes, picks her off the frame, clips her wings, and puts her into the hive again."

"But, aren't those gloves awkward?"

"Not when one gets used to them. Why, I don't care how cross the bees are; I can work right along just the same."

"But, aren't the gloves filled full of stings?"

"Why, yes, I suppose they are." Then she produced her old pair for my inspection, but I did not see the evidence of many stings. "But," she continued, "I would rather have stings in my gloves than in my fingers."

I told her I had half a notion to try the same sort of gloves when I got home, just to see if it were awkward to handle frames with them.

I have always had a sort of pity for timid ones who find it necessary to wear gloves among the bees; but fear of stings, I am now convinced, is not the only reason why they are used, unless it is in the case of the Coggshalls. I would pity the man who did *not* wear them in *their* yards as they work them, especially when La Mar Coggshall gives a hive one of those famous kicks of his as illustrated in another column.

COGGSHALL AND HIS FAMOUS KICK-OFF-SUPER ACT.

A YEAR or so ago I told you something about how Mr. W. L. Coggshall saves time by kicking his hive-supers and hive-bodies off the brood-nest. At two or three of the conventions where I have told of this acrobatic feat, there have been quite a number of questions asked. One man increduously asked, "Why, do you mean he actually kicks the hive-body off from the brood-nest?" He seemed to think that I was either stretching the truth or that I meant Mr. Coggshall did it metaphorically. Well, to show that he literally and truly does that thing, I take pleasure in presenting an engraving in another column.

You have all heard about "kickers;" but here is a man who has done another kind of kicking—kicked off more hive-supers, I will venture to say, than any man living; and he does it in such away as not to rack the hive-body nor to make the bees more than stinging cross. But what cares he if it *does* stir the bees up a little? Any man who would dare to throw a whole hive of live mad bees upon a charging bull would not be afraid to take a few stings himself. The drawing elsewhere, showing Coggshall, the bees, and the bull, is also taken from an instantaneous photo. Unfortunately the kodaker was so badly scared that he did not get a very steady picture—at least, not clear enough to answer for a half-tone reproduction; but he succeeded in procuring a picture from which our artist could make a pen-drawing. I told him to follow the picture faithfully, even giving the gleam of the eyes of the about-to-be vanquished bovine. I have seen that same gleam myself, and know how it feels to have the hot breath and a pair of wicked eyes almost, as it were, in one's face. Yes, I have been there exactly, but I did not have the bees to help me do the vanquishing.

LOCALITY, AND ITS BEARING ON PROPOLIS; HOFFMAN FRAMES INTOLERABLE AT DR. MILLER'S.

In my travels over the United States I have paid more or less attention to the matter of propolis and how its character varies in different localities. In one place it will have a reddish transparent color; in another, a sort of grayish muddy-brown, something like coffee with milk in it; but instead of being brittle it has more or less of a gummy, sticky consistency. Again, the quantity of either the red or brown article may vary considerably. At Dr. Miller's, when I visited him some two weeks ago, I noticed how propolis seemed to be daubed over every thing. It was of a brownish color, and was so sticky, indeed, that it would get daubed all over one's fingers like so much half-cooked taffy. At Medina we have a propolis of about the same consistency, but I should say there is less than half as much of it. Here I can usually separate Hoffman frames with my fingers; but at Dr. Miller's the same operation would be almost out of the question. Indeed, I noticed the doctor had to pry as hard on his nail-spaced frames as we on our Hoffmans.

The doctor has long insisted that Hoffman frames would not be suitable for his locality, and I have always wondered *why;* but I understand it all now.

In any locality where propolis is freely smeared over every thing as it is at Dr. Miller's, any thing in the nature of a self-spacing frame having wood parts coming in contact would be simply intolerable; but in the State of New York, not only Hoffman frames, but frames with end-bars closed all the way down, are perfectly practicable and feasible. There propolis is scantily used, and what there is has a transparent reddish cast, inclined to brittleness rather than to gumminess. In Ohio we have about the same quantity, but different in color.

In any locality, so far as I know, propolis is inclined to be more sticky during the months of September and October than at any other time of the year; but that stickiness for the same time is considerably worse at Dr. Miller's than here at Medina. Why, when I pulled one of the doctor's hive-covers off, the propolis would stick to it in strings six or eight inches long. Indeed, these strings reminded me of miniature water-spouts, one end sticking to the frames and one to the cover.

Well, now, what is the practical conclusion about this whole matter? Simply this: That in a locality like Dr. Miller's a nail-spaced or a staple-spaced frame, or any frame with metal projections or distance-keepers, would be preferable to one having wood coming in contact. Indeed, I am not sure but the metal-spaced frames would be preferred in any locality.

I have been at Dr. Miller's several times before, but I had never noticed particularly the amount of propolis on his frames—the waxy, sticky kind that would almost make one feel ugly, even if he did not say any thing naughty.

Here is the advantage of traveling around and comparing localities; and the editor of a bee-paper is just the man, out of all the fraternity, who should go enough among bee-keepers to broaden his mind to a point where he can see reasons *why* one holds to one opinion and another to an opinion almost the opposite. For instance, one bee-keeper thinks the Hoffman frame an intolerable nuisance, and another regards it as the *ne plus ultra* of perfection.

OMAHA CONVENTION NOTES.

At the Omaha convention various practical questions were propounded and answered by the members present. Among others was the question,

WHAT IS THE FOOD VALUE OF HONEY?

Dr. Miller facetiously threw in the reply, "Fifteen cents a pound."

Mr. Whitcomb, of a more serious turn of mind, thought we often underrated the value of honey as food and medicine. In his opinion there was more nutriment in a pound of honey than in two pounds of pork, and more medicine than in fifty cents' worth of drugs In his institute work he took pains to emphasize the value of honey as a food, and said it should be on the table as an every-day diet. Others concurred in this, and made the suggestion that Dr. Miller's honey-leaflet, "Food Value of Honey," should be thoroughly distributed among consumers. Dr. Mason stated that his family used a large amount of honey; that, during a siege of the grip, those who ate liberally of this best of all sweets escaped the full effects of the malady, and those who did not were stricken down; and then he asked the question, "How much longer should we live if we used honey in our coffee instead of sugar?"

Another question was asked:

IS EXTRACTED HONEY MORE HEALTHFUL THAN COMB HONEY?

Dr. Miller believed that the average sample of comb was better than the average sample of extracted. As to the wax in the former, that was surely indigestible. We might swallow it, and it probably would do us no great harm, nor would it do us any good. The best extracted was surely better than the average of comb. Still another question was this:

IS IT BETTER TO USE WHITE OR CREAM-COLORED SECTIONS?

This called forth a lively discussion. While a few talked for cream-colored on the ground of economy, the majority preferred to pay more and get the very best. This preference seemed to be based not so much on the fact that cream-colored goods *looked* inferior, but on the supposition that the wood was less tough, and hence more liable to break at the folds. Several dealers testified to having sold cream-colored sections since they could get no other in the rush of last season. This experiment they would not try to undertake again, as their customers entered a " vigorous kick."

Attention was drawn to the fact that cream-colored sections were not necessarily inferior, in point of toughness or strength of wood, to the ordinary white basswood. The wood might be cream-colored because of inferior timber, and it might be cream-colored because it might be summer instead of winter cut. In either case one timber would be as tough as the other—the only difference being in the color. Basswood, to be white, should be cut in the winter, and piled during freezing weather; otherwise it was liable to stain.

As to whether the ordinary white honey showed off any better in cream-colored sections, there was a diversity of opinion. Some thought the honey looked whiter; others, including Dr. Miller, could not see that it made any difference.

CUBAN HONEY, AND ITS EFFECT ON AMERICAN MARKETS.

A very interesting paper from O. O. Poppleton, on Cuba as a country for bees, was read at the Omaha convention. He kept bees on that island a few years ago, but at present was in Florida. He spoke of the fact that apiculture in Cuba was now in a crude state, but there were opportunities for a wonderful development of the business. Indeed, he thought it might outrank California. He went so far as to say that Cuban honey could be produced for two cents a pound.

In the discussion following, the general consensus of opinion seemed to be that nearly all the honey coming from Cuba had an insipid or inferior flavor; and that, while it might compete in the market with some honeys produced in the southern part of the United States, it could not have much effect on the honeys of the northern portion. The point was made that the honey taste or honey standard of a locality is gauged largely by the kind produced in that locality. For instance, in certain parts of York State buckwheat honey is preferred to white by many. In Cuba the " bellflower " would have the preference, and that, indeed, was pronounced to be a honey of very fine flavor, but not of such a flavor as would tickle the palates of those who have been used to the peculiar taste of Northern basswood and clover. It was further shown that Cuban honey had been generally quoted as so much a gallon, and that in many places in the United States it had sometimes gone begging; that it was fit only for the use of bakers, who prefer it to honeys of a lighter color and milder flavor. Indeed, some one said the bakers preferred the rank dark honeys because the milder flavors would entirely disappear in the baked goods, while the strong-tasting article would make a honey-jumble or cooky of a distinct honey taste.

NOTES OF TRAVEL

BY A. I. ROOT.

YELLOWSTONE PARK, CONTINUED.

One of the pleasant features of Yellowstone Park is the number of tourists one meets every little while. Some of them travel in very rude and commonplace vehicles. For instance, we saw one outfit that consisted of a little cabin made of rough pine boards mounted on a rude cart drawn by one horse. A stovepipe stuck out of the roof of the cabin. Inside there was an arrangement for sleeping, cooking, dining, etc. A good many go in families, or a crowd of several, with ordinary canvas-top-covered wagons. The regular transportation companies have, as a rule, very nice coaches. I remember passing several times what they called the Chadburn Company. These are, perhaps, the handsomest coaches seen in the park. A wagon follows after them, carrying the tents, etc., which are set up at every stopping-place. The coaches look very well, it is true; but the glimpses we had of their hasty camping-places showed that they were any thing but attractive compared with the Wylie camps. You see, every thing has to be torn to pieces and loaded up every day, and they are not as pleasant or tidy as the permanent camps. The Chadburn rigs, however, are very cheap. They make the round trip in about five and a half days, and charge $25, every thing furnished.

A good many go on horseback. Several times I noticed a young lady (with a party of nice people) riding a very pretty pony. Her pony was so well trained, and so obedient, she would alight whenever she wanted to examine any thing more thoroughly, and he would stand until she came back or called him. She was very tastily attired in a neat riding habit. Not only was her pony a beauty, but the young woman herself made one forget the springs and geysers sometimes. When near the Black Growler she left her pony at a little distance, and made her investigations at about the same time I made mine. "Jim" was pricking up his ears at the sight of the escaping steam, and he seemed a little alarmed at the terrific uproar. When his mistress had finished her investigations she beckoned him to come on, as she was ready to ride. Just at this point I was more interested in seeing whether Jim would march right straight up to his mistress, so close to the hissing steam, than I was in the geysers. He went up a little way, then stopped, and by his actions he showed he would like to be excused from going any nearer. At this she spoke a little peremptorily: "Come right along, Jim. It won't hurt you a particle. Don't you see *I* am here? *Come*, I say." To my great surprise, the handsome, obedient, and intelligent animal obeyed her command, and came right up, even though he trembled with fear. He had been so well trained, and evidently had such confidence in, and love for, his handsome young mistress that he yielded to the motion of her hand and to the entreaties of her voice when perhaps a strong man could not have pulled him up by force. If any of our party should happen to read this, they will know why the stage had to wait so long for me to investigate (?) more critically the Black Growler and Hurricane. I can not quite recall all the wonderful things I saw on that eventful afternoon. Toward evening the coach crossed the bridge over Firehole River, passing by Morning-glory Spring, Fan Geyser and Mortar Geyser, stopping a little right at the bridge to let us catch a brief glimpse of Riverside Geyser, that throws a stream of water so it falls directly into the river. Then we went around to the Wylie permanent camp right close to Splendid Geyser. At this camp we passed all day Saturday as well as Sunday; but I have already told you about the meeting Sabbath evening. Early in the morning we visited Riverside Geyser and saw it play repeatedly, for it "goes off" about three times a day. This is really one of the prettiest in the basin, in my opinion. Shortly before it has an eruption, a little fellow a few yards away sends up a slender stream of steam and water, with quite a comical mimic of the great geysers. The eruptions commence gradually, increasing till they get up to 100 feet. There are some seats placed on the opposite side of the river, where you can usually find more or less spectators when the eruption is in the daytime.

CONE OF THE GIANT GEYSER.

As an illustration of the wonderful crystal clearness of the water, when several of our party were over there just at dusk, after an eruption, I proposed jumping down into a cavity near the crater, to examine it more thoroughly. One of the ladies cautioned me, saying she did not think the water was all out. "Oh! yes, it is," said I. "See." Then I tossed in a pebble to make sure it was empty. To my great surprise and considerable fright it splashed in the boiling water that filled the basin. Had I stepped in as I proposed, I should have been scalded severely.

There are twenty-five or thirty geysers all together, mostly in this Upper Geyser Basin. By the way, you want to be sure to say *geyser*, giving the letters *ey* the sound of *I*. If you do not, the guides and drivers will be sure to catch you up.

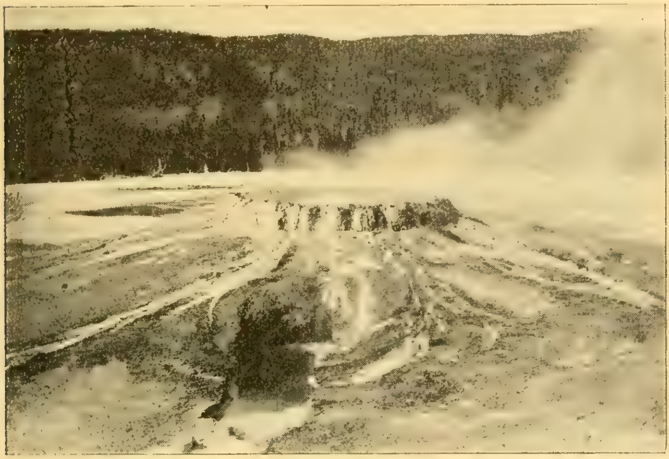
Now I can not describe all of these wonderful springs and geysers; but I will go over them very briefly. "Grotto" has a great number of craters, and during an eruption the water and steam make a terrible commotion as they puff and spurt out of the various openings. "Giant" is, as its name indicates, one of the principal ones in the lot; but as it goes off only once in from two to four days, we did not see it. To tell the truth, it played in the night after we arrived. But I did not hear it, as I was so tired from the amount of travel I did the day before. Below is a picture of the mouth of the giant.

On one side the crater is broken away as you see. This was probably done by some tremendous eruption. There is an accumulation or deposit around it for forty or fifty feet. The water is sometimes lifted in a column 250 high, and the rumbling has been likened to that of a train of moving cars. The play lasts from one and a half to two hours. The cone you see in the picture is about ten feet high.

There is a new geyser called Daisy. This is near by the Comet, and was so close to our camp that a number of our party saw it several times, for it goes off about once every other hour.

One of the prettiest things in the whole geyser basin is what is called the Punch-bowl. It is not a geyser, but a beautiful hot spring. On the next page is a picture of it.

Now, these scalloped walls that hold the pool of water remind me more of beautiful Etruscan jewelry, interspersed with the choicest and rarest gems, than any thing else. The outside edge is beautifully decorated; but when you come to look over into the water, with its sparkling clearness, you think it must be a brilliant illusion borrowed from scenes in the Arabian Nights. The most beautiful part of it is on the opposite side of the wagon-road that runs near. But our party had seen so many sights I absolutely could not get them to alight from the coach and walk around the Punch-bowl. The edge of the basin is about five feet above the level of the ground. The whole structure is kept bright with its startling brilliancy by the boiling water that constantly flows over and washes and cleanses the whole of it. The escaping steam and gas produce waves like ripples that make it a thing of life instead of a piece of dead jewelry. In the foreground you will notice a little pool. I think this has been called the Angels' Coffin, or something that sounds like that; and, in fact, it has the appearance of being lined with the richest and rarest satin that the world has ever produced. All I have ever seen in the way of silks and bright ribbons can hardly compare with it.



DEVIL'S PUNCH-BOWL.

A little further away from our camping-place is Beauty Spring, Grand Turban Geyser, Sawmill, and Spasmodic. Sawmill Geyser looked like a saw, or at least some imagined it did, and it makes a hissing noise, something like a buzz saw cutting a log. As it goes off every thirty minutes you can hear it, and then see it, every little while. Spasmodic goes off about every twenty minutes, and throws water about forty feet high. The Lioness and Cubs are close together. While the mother erupts only about once a day, the cubs are spouting water ten or fifteen feet high every little while; and when you see the three playing together it makes a very pretty sight.

Now, there is one beautiful spring not far from here, the name of which I have forgotten. Its wonderful peculiarity is that it is constantly sending up bubbles of gas or steam that have a brilliant blue color. As you catch a view of this weird tint away down in the depths of the pool, and watch till it reaches the surface, it seems like a phantom light. I went over and sat down all alone, and tried to investigate and see what it was that caused this blue sulphurous dancing flame, as it seemed to be, away down in the depths of the water. I could not make it out. When the bubble had reached the surface it was gone. Biscuit Basin is somewhere in this vicinity. It is in connection with Sapphire Pool. We give a picture below. These little projections above the water look for all the world like veritable biscuits, but many of them were rather more fantastically ornamented than we find them on the dining-table. Although they looked soft, and almost fit to eat, you can walk over them without injuring the delicate surface; and if your foot should soil them, the boiling water will soon wash them off clean. This Sapphire Pool is a pulsating spring; and it is the rising and falling of the water that has produced the biscuits. You can not get a good view of Sapphire Pool without walking carefully over these stepping-stones.

BISCUIT BASIN AND SAPPHIRE POOL.

Castle Geyser attracts very much attention. There are seats all around this one, where visitors can sit and wait for the display. You will almost always find a crowd hanging around it, because it has a rather tantalizing fashion of making strangers think it is going to erupt. It will often start up and throw the water thirty feet high, when it has no notion of going up the whole hundred feet at all. It has the largest cone of any in the whole region. You can easily walk up to the summit; and the tinted and colored pools of boiling water that you meet all the way amply pay for the time and pains. It goes off at intervals of from eight to thirty hours. Sometimes it makes believe five or six hours before it goes off. When it does erupt, it often runs short of material, so far as water is concerned, and then it spouts out steam until it makes night hideous with the sound. There are some of the most brilliant pools close by Castle Geyser. One of them is called Castle Well.

Perhaps it would be well to wind up with Old Faithful, so called because it has never, in the memory of man, disappointed a customer. You can go and hang around Castle, Giant, and ever so many others, thinking they are going off very soon, until you get tired of waiting. But Old Faithful is as regular as our best-appointed railways. Every 63 minutes, day and night, winter and summer, the exhibition is sure to "come off." People may stand and hold their watches, and tell you when the first act in the drama will begin. Small spurts begin five or ten minutes ahead of time to let everbody know what is coming. The guide-books say, "a column of hot water two feet in diameter" is thrown from 125 to 150 feet, straight up. I should say the distance is all right, but it did not seem to me that the stream was so large. The crater is on the summit of a littte hill about twelve feet above the level of the ground. The ground slopes off gradually with the usual pools of water, clear as crystal.

Let me give you an idea of the amount of water that is thrown out by some of these springs. Chittenden's book on Yellowstone Park says than an average eruption of Old Faithful throws out more than a million gallons of water; and such a quantity of water every hour would be enough to supply a city of 300,000 inhabitants. Now, then, think of the combinations of heat and water exactly united so as to keep this wonderful display going on, day and night, winter and summer, for not only a thousand years, but perhaps for many thousands. Well may we exclaim with the Psalmist, "O Lord, how wonderful are thy works! in wisdom hast thou made them all."

OUR HOMES,

BY A. I. ROOT.

If it be possible, as much as lieth in you, live peaceably with all men.—Rom. 12: 18.

When I was on my way to Yellowstone Park I stopped over during the day in Chicago. I mentioned trying to rent a wheel in the morning, and what the policeman said. Well, I did not find one to suit me until I called at the office of the *American Bee Journal;* and the editor then kindly placed his wheel, almost a brand-new one, at my service. After giving me some directions, the wheel and I started off together. Just as my foot struck the pedal, however, I discovered the crank was bent. I got off, and was going to ask Mr. York about it, but he had turned the corner. I called at the first repair-shop, and asked them to straighten the crank; but they explained that the material was of such fine steel, and of such very high temper it would be quite sure to break; and when told it was a borrowed wheel they said I had better not do any thing with it.

I started out for Lincoln Park, but at first I thought I could not possibly get along with a wheel in that condition. At every half-turn of the crank I was obliged to shift my heel, first one way and then the other. I thought of going back to tell friend York that I could not ride it in that way. Then I thought of going to another repair-shop. But I finally decided not to take liberties with a borrowed article, and concluded I would go out to Lincoln Park and back in some way, anyhow.

It was not very long before I found out that my heel was learning the crook so it did it with very much less trouble. A little later I rode quite comfortably, and before noon my ankle grew so familiar with the rocking of the crooked crank that it accommodated itself to the unusual twisting motion without shifting the heel at all. After dinner I rode just as well, or very nearly so, as with a crank perfectly straight. This illustrates the wonderful way in which these bodies of ours adapt themselves, and very quickly too, to unusual demands, or new circumstances and conditions. I have read in some scientific work that this wonderful thing which wheelers call "second wind" comes about largely because, after a certain set of nerves and muscles has been required to do a certain work over and over hundreds and thousands of times, they get so they work in a sort of automatic way. They go through the motions as a matter of course, without any exercise of the will, and comparatively little weariness of muscle. Of course, outdoor air, and a large amount of oxygen, have much to do with it.

In the afternoon I took a ride on the same wheel down Jackson Boulevard, going many miles, and without a thought of a crooked crank. Friend York explained to me, after I got home, that he had forgotten to mention the matter, and tell me that, if I would keep right on, in a little while I would not notice it. Now, I wonder if that is a trick our good editor has of keeping a wheel that nobody would want to borrow. I am sure, though, he was very glad indeed to accommodate me in the way he did. The reason I did not use my own wheel in Chicago was because it was packed in a wheel-trunk, and checked clear through to Cinnabar, Montana. On arriving at the latter place I unpacked my wheel, put my extra clothing, etc., back in the trunk, and started to explore the wonders of the park. Now, a very singular thing occurred right here. I got on to my wheel to see that it was all right, with proper adjustment, etc.; but before I had gone a rod I said, "Well, I declare! my wheel has got injured in transit, after all. And how strange it has happened! that very same crank is bent that was bent on Mr. York's wheel."

I got off and looked the crooked crank all over, and it seemed all right. I spun it around with my foot. Every thing was perfectly free, perfectly solid and true. I got on again, but there it was. My foot wanted to rock back and forth at every revolution of the crank, just as it had been doing in Chicago. Do you guess at the truth, dear reader? Well, I did about that time, and began to have a big laugh. In just one day's riding my ankle had become so adapted to its unusual conditions that the stupid thing would not work right when I had a crank that was *not* bent; and I had to go through the same experience in teaching my left ankle to adapt itself to a *crooked* crank. It did not take so long, however. But the next morning the ankle commenced again to make a feeble protest, and to demand a crooked crank.

Now, there is a great moral lesson here. God has, in his infinite love and wisdom, made these bodies of ours so flexible, if that is the proper word, that they can put up with or adapt themselves to an infinite variety of circumstances and suggestions. Some months ago I wrote you about a second self or another fellow that exists in my make-up, and who seems to be taking care of the welfare of my physical being. This fellow gets turned around, as I told you, and almost declares at times that the sun rises in the west and sets in the east. Now, I had a glimpse of this contrary chap right here. He kept insisting that a crooked crank is better than a straight one, simply because he had, with much trouble and pains, adapted himself to the former.

Well, I have had a long talk (have I not?) about something which, even though it be interesting and peculiar, has no particular bearing on our text. But are you *sure* it has no bearing? Does it not just begin to occur to you that, if these bodies of ours are capable of such adaptability, we should gather from it moral and spiritual lessons? While I have been telling this story, doubtless more than one of you have remembered similar experiences. When a boy first tastes of tobacco his whole physical frame rebels—yes, and continues to rebel; but if the boy gets it into his head that it is going to make him manly, and if he persists in forcing the unnatural poison into his system, this wonderful economy of ours makes arrangements to get along and endure the poison. Getting inoculated so as to enjoy comparative immunity from the poisonous effects of bee-stings is along in the same line. Nature does at first protest, then does the best she can under the circumstances; then she quiets down and gets along in tolerable comfort, and without being very much disturbed by the poison. Perhaps it might be well to suggest here, however, that dear, kind, patient, and oftentimes long-suffering, old Dame Nature does finally, at least sometimes, give way, finding herself unable to stand the strain. The result is tobacco ulcers, and, with strong drink, delirium tremens; and some of our veteran bee-keepers declare that, after one has been stung an *unusual* number of times, month after month and year after year, serious derangements begin to follow.*

Just now, however, we can not stop to follow through all this line of thought. I told you how I got along with the crooked crank. Some of us have had a like experience in getting along with crooked or cranky neighbors. Where they are both cranky and crooked, it is sometimes pretty hard to follow out the teachings of our text. But, dear brother and sister, I want to assure you that there are great and unexplored regions in this direction. I myself am not naturally constituted so as to get along with contrary people. I have said hundreds of times, "I declare, I will not put up with this thing any longer;" but when I have considered the matter a little more, or, better still, when I have come to *pray* over it, oh how many times I have decided as I did with the crank to that wheel! and as I have made my decision I have said to myself, "Lord, help me to get along with this unreasonable neighbor of mine. Help me to choose the best and wisest way under the circumstances, and help me to bear with him for his own sake and for the sake of his wife and children. Help me to put down self, and to live peaceably with him for *Christ's sake*." And how glad I am that I have put up with the peculiar characteristics—nay, more than that, with the unlovely traits of those I sometimes meet.

Years ago I became acquainted with a man who had some peculiar things about him that were very vexing. He had had bad luck in getting a place, and worse still in keeping it. Sooner or later almost everybody who worked near or with him became tired of his ways. I remember distinctly that one of his own countrymen declared he would not work with him at all. This was very annoying under the circumstances, but we finally concluded to keep the two men away from each other, even though it was very desirable at times to put them together to do certain work. This man tried me so exceedingly that I several times declared I could *not* be bothered with him any more. Finally his wife came to me pleading. She said, in substance, "Mr. Root, I can not deny what you say; but suppose you were in *my* place—suppose you were obliged to put up with this very thing every day of your life, as I am. You certainly can not advise *me* to give him up, as *you* have decided to do, for you know the large family of children that are about us." She was a Christian woman; and as she closed her remarks she uttered a little prayer that I knew came from her heart. The prayer was very much like the one I have breathed so often—"Lord, help me in my extremity." Do you wonder I looked at the matter in a different light? I, too, prayed for grace. I studied this man and talked with him, and finally decided that his peculiar ways were not altogether from deliberate stubbornness. I began to discover he had a fashion of going ahead with his work without asking questions enough to be sure that he knew what was wanted. Years have passed. I rejoice now that I can call him one of my particular friends. He has become acquainted with me, and I with him. He is cranky, and I do not know but *I* am cranky; but I believe the grace of God has helped us both to manage so that our respective crooked cranks do not come in collision. Well, my experience with him has helped me to get along with *other* people. Day after day I am beginning to find out that, if we are patient, and keep our tempers down, we can get along pleasantly with many things that seem at first sight as out of the question.

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* I clip the following from a recent issue of the *American Cultivator*:

> According to the results of an inquiry among the bee-keepers of Germany, human beings may acquire immunity from the effects of bee-stings simply by being stung a sufficient number of times. In some cases thirty stings sufficed to impart the desired immunity; in other cases as many as one hundred stings must be endured before the victim ceases to suffer serious inconvenience from the attack of bees. Occasionally a person is found who is naturally immune to the effect of bee-stings, while others are not able to acquire immunity by any amount of heroic experience.

Once more: The things we often think at first will not answer at all sometimes prove to be blessings in disguise. The crooked crank, when we become accustomed to it, helps us to get through many troublesome places where the straight one we thought we *must* have wouldn't answer. What a blessed work it is to try to make the *best* of every thing for Christ's sake!

For a few months I have had considerable to do with railroad men and railroad corporations. On my way to Omaha, the baggage-master of the Northwestern R.R. said I would have to pay extra for my wheel, even though it was packed in a trunk with my other clothing, etc. I told him he was wrong, but he produced his documents to show that wheels and baby-carriages would have to go at owner's risk, and there was nothing said about wheels being packed up in trunks being an exception. I told him the wheel had gone thousands of miles over that very road, packed in that trunk, as personal baggage; but he said it was all wrong, and they ought to have made me pay for every mile they carried it. It was near train time, so I paid the 80 cents demanded, and told him I would refer the matter to the general baggage-master, on my return. To my surprise, the latter gave his decision in accordance with that of his under officer. I felt sure I was right and they were wrong; but I remembered my experience with the crooked crank, and took it very good-naturedly, and asked him if he wished to have it go out that they refused to accept bicycles as baggage, even when taken apart and packed in a trunk. The change in my attitude seemed to have the effect of producing a change in the railroad official. He said it would undoubtedly make a difference, having the wheel so it could be handled like any other trunk or baggage, and finally said my 80 cents would be returned to me. At first I thought he would hand it right over there; and when he explained to me that it would have to go through a system of red tape with the necessary vouchers, and be sent me by mail, I began to be impatient again. But a better spirit triumphed.

And now, friends, I want to put in right here a little bit of defense for the railroad companies. I wish to do so because I know that many who have little to do with railroads do not understand the matter. I have sometimes told you I could not manage a business, especially a garden, unless I could go over the premises every day, or, still better, *every hour*. Now, no one man owns a great railroad. It is owned by a company of stockholders. A great part of the work is done hundreds (sometimes thousands) of miles away from where the boss or bosses live. Strict rules have to be made, and measures taken so that property or money can not be wrongfully appropriated. Let me illustrate the way dining-cars are now managed. You sit down to the table, and the porter gives you a bill of fare showing the price of each article; then he gives you a printed blank and pencil, and desires you to write out what you want. If you tell him to bring you a forty-cent beefsteak and a cup of coffee he will say, "No; you must write it down." This printed form also directs you to pay the money to the dining-car conductor. None is to be given to the porters. Then another printed list, giving the price of each article, is handed you, and the conductor punches out the price of just what you have ordered. All this is so that the proper officer can review the entire business of the dining-car. The cash handed over tallies with all these slips, and the whole thing is so arranged that any kind of crookedness is almost impossible. You notice the street-cars are managed in a similar way. No money is paid to anybody without a record. Ingenious machinery, with the assistance of the great purchasing public, keeps it all straight. Now, the baggage-master who took my 80 cents can *receive* money, but he can not pay any back; neither can his superior officer pay any back. Somebody might say, "Well, that is the last you will ever see of your money." Not so, my friend. The Northwestern can not afford to do business in that way. I am sure the 80 cents will be forthcoming, although it may take several weeks for it to get around.

While in Omaha I wanted to make a trip to Mitchell, South Dakota. In order to catch my train I was obliged to leave the exposition grounds during a very entertaining exhibition given by the life-saving crew. I calculated so as to have plenty of time to reach the station; but when we got almost there the car stopped. I told the conductor I wanted to catch a certain train. He said he would do his best to make it. Just as I thought we were all right, he said he was sorry to tell me that they could not go another inch. For some reason, unknown to him, "the stuff was off." "Stuff," I found, was with him a short word for the electric current. I told him I thought I could catch my train on foot. He directed me where to go, and said if he got started so as to catch me he would do so. I found my train standing at the depot; but my wheel-trunk was not checked. A long string of other passengers were standing in a row at the counter, waiting to have their baggage checked. I found out by inquiry that none except myself were going to take *that* train, and so I asked the baggage-man to be kind enough to wait on me without taking my turn as usual. He was in the act of doing this when some indiscreet passenger who happened to be looking over my shoulder declared that the agents at that depot were the slowest set of fellows on the face of the earth. The man at work for me overheard it. He was a red-headed Englishman (no disrespect intended here for red-headed people nor for Englishmen either; in fact, my wife would feel hurt in the latter case). He turned around with an angry face, and with a gleaming eye told me I had better get somebody else to do his work if his motions did not suit me. My train was starting, and there was no time for an apology; but, oh how wicked it was for the man at my shoulder to make such a remark! Even if what he said had been true, it only made matters worse. If this world could only learn not to make unkind remarks that do no good, what a lot of hard and unpleasant feelings might be avoided!

While in Livingston, Montana, I became acquainted with a baggage-man. His wife's mother keeps bees; and when he saw "A. I. Root" on my wheel-trunk, he and I were old friends. He told me how exceedingly difficult it was for him to get baggage off when people all seemed to think it was right and proper to wait until the train was in before they looked after *their* baggage. Do not quarrel with the railroad officials, friends. Adapt yourselves to the circumstances. Put yourself in the places of these officials. I know they are not all good men, and not *always* doing their best; but if we who profess to be Christians would pray for the direction of the Holy Spirit that we may make them better instead of worse, oh what a change there would soon be seen all around!

Now, I have not made half the applications I wanted to. There are husbands and wives who permit Satan to suggest that they can't get along with each other; yes, and after the two have unitedly brought up a family they sometimes have quarrels. That grand poem by Will Carlton, right along in this line, nobody knows how much good it has done. and there are fathers and sons who can not get along together; and if you inquire into it you will find many times the reason they can not get along is just because the boy *is* a "chip of the old block." Let me say to the father, and to the boy too, remember the story about the bent bicycle-crank. Sometimes *brothers* go to law because they can not agree. Whatever you do, dear brother or sister, do not quarrel with a relative. Before you think of going to a lawyer, give to the other *all he will take.* Now, please do not understand I am making a fling at lawyers, in the above. Some of the best men I know of are lawyers. I know these men have often urged their clients to settle things in a peaceable and inexpensive way. In fact, I believe our best and ablest lawyers always do this now. But when people are contrary, and will not be advised, then the lawyers will undertake to do the best they can under the circumstances. Of course, we must look out for ourselves. If you do not wish to be disappointed in charges by lawyers, railroad men, doctors, or anybody else, insist on knowing beforehand what the thing is going to cost. Have an agreement, if possible, with everybody, before setting such party at work; then if things go wrong, cheerfully adapt yourself to the circumstances and conditions, and make the best of it, and live at peace with all men, so far as in you lieth.

TEMPERANCE IN MEDINA.

Since the issue of Our Homes for September 15, quite a number have inquired anxiously about the outcome of open saloons in Medina. May God be praised that those on the side of righteousness were greater than those who were working against us. Out of 561 ballots, 320 were "dry" (or opposed to letting saloons come back to our village), and 241 were in favor of letting them start up again after a cheering absence of over twelve years. The contest was the most spirited of any thing of the kind I have ever known in this place. The wets claimed to have been at work for a whole year; and had they succeeded in getting a vote at the time they called for it, no doubt the saloon would have gained the victory. Our town council, however, managed to put them off so as to give the temperance people a chance. Our ministers got together and arranged for a series of union temperance meetings, holding one every Sunday night at different churches as long as the campaign lasted. As is usually the case, a great many good people would not attend. To meet this difficulty we had some of the sermons printed in the form of bulletins. The paper that I sent out for our employees (given in our issue for Sept. 15), was called Bulletin No. 1. The week before election, the women of Medina voted in order to show the council what *they* thought of the matter, and we were rejoiced to find about 375 voted against the saloon, and *not one* for it. May God bless the women for the stand they took. Then our high school, and, in fact, all of our schools, followed suit, and the vote of the pupils was practically unanimous, although a few of the boys would vote as their fathers were going to vote, in spite of all the mothers could do.

Every argument was met that the saloon advocates could advance. Lists were made of our people, both wet and dry; and those who seemed inclined to vote wet, or who were indifferent, were visited by temperance people who would be most likely to have influence with the person in question. At the present writing I have not been able to find that a single one of our employees voted "wet," although quite a number stayed away from the polls and did not vote at all. Our people marched in procession to the polls; and as there were about a hundred of them, they were, in God's providence, enabled to turn the scale on the side of humanity. In such a contest as this, we of course did not want anybody to "crow" over the vanquished foe as they do in political times. Our ministers enjoined us to be very careful about doing any thing that might provoke an antagonistic or bitter spirit. In a work of this kind, gentleness and a kind brotherly feeling, even for those who are in error, are the weapons to be used.

On page 704 I published an account of the arrest and imprisonment of Rev. G. J. Raynor, of Columbus, O. It is time now to give you the final outcome of the matter, an account of which I copy from the *American Issue* for September, 1898:

THE CASE AGAINST MR. RAYNOR DISMISSED.

The suit for criminal libel instituted against Rev. Gilbert J. Raynor by Patrick Kelly, superintendent of police of Columbus, was dismissed for want of evidence after the prosecution had offered all their testimony. This was just as every one expected it would end Even the lawyers for the prosecution knew they had no case, and so expressed themselves before the case was called. The facts are, the administration was so enraged at the revelations made by Mr. Raynor that they lost their heads, and, as is usually the case with such people, instead of setting about to correct the conditions that they and everybody else in Columbus know exist, sought to wreak vengeance upon Mr. Raynor for revealing the corruption that is rampant. They arrested and falsely imprisoned him, and in the most malicious manner attempted to persecute him. Mr. Raynor has instituted a $20,000 damage suit against Patrick Kelly for false imprisonment and malicious persecution. These jugglers with justice will yet find that arresting men and thrusting them in jail for uncovering their official deformities is possibly not quite as funny business as they at first supposed it would be.

HIGH-PRESSURE
GARDENING
BY
A. I. ROOT.

OUR BEAUTIFUL FALL.

At present writing, Oct. 13, we have not had a bit of frost. Tomatoes, lima beans, cow peas, and last, but not least, potatoes, are just as fresh and luxuriant as they were in July—yes, even more so, because we now have rain and then we didn't. Manum's Enormous and the Craig potato are just doing wonders. The ground has been breaking open to such an extent with the great tubers that we hoed fine dirt into the cracks to prevent the sun from turning them green. Just think of it! hoeing potatoes in the middle of October, and the hoeing has really done them good. We could not hoe much, however, except where the stand was so poor that the hills were quite a little distance apart, because the rank vines run out in every direction. We had one piece of Manum's Enormous where the potatoes had hardly half covered the ground because so many did not germinate during the July drouth, and I meditated planting beans or something else in the missing hills. I am glad now, however, that I did not, for the ground is just literally covered like a swamp, with great beautiful potato-vines. Our Bovees, planted very late, are some of them still green; and the New Queens, planted the first of April, that took on a second growth, are just putting in their best licks away here in October. There is going to be an enormous crop on the ground, but I suppose they will be awful-*looking* potatoes. My impression is, however, they will answer just as well for seed, for it is the peculiar season, and not the habit of the potato, that makes them prongy.

The cow peas are making pods at an amazing rate; and squashes and pumpkins are producing a crop that is almost unheard of before. Cauliflower and cabbage are also promising great beautiful heads away along after everybody else has quit gardening. We shall have to look out for the frost when it *does* come—that is all.

COW PEAS.

Ed. Gleanings:—I noticed with pleasure the article in GLEANINGS on cow peas, by Mr. Benson and the editor; and as I lived in Illinois many years, and eighteen years in the South, I feel like speaking a few words concerning cow and field peas.

There are many varieties of the cow (or field) pea as there are also of the English pea. There is the large white pea with the black eye, called by some the Crowder. Then there is the shaded, called Whippoorwill pea, both bunch and very early; the Black pea; the Clay, Red Ripper, Unknown, Snake, and many other kinds. Now, it is a fact that not many people know that there are some of those cow (or field) peas that do better in the Middle States and some in the Northern States than they do in the South; that is, they mature more peas, and, as suggested by Mr. Benson, bloom and bear more freely in cool weather. The Clay pea will make more peas in Kentucky and Indiana than it will further south. The Snake pea makes 30 feet of vine here, but few or no peas. The Whipporwill and Crowder do well in Southern Illinois, and I suppose some of the rest would, but I have tried only these two kinds since I came south. I would suggest that all who are interested in forage-making and restoring worn-out soil, and making rich soil richer, try several kinds of peas in the Northern and Middle States until they find some variety that is specially adapted to their climate. I have seen from 200 to 300 pods on a single vine when it ran up and over a dead peach-tree or some other support where it could spread well; and some of the vines were 20 to 25 feet long. The bunch kinds make the best hay, as it cures quickly and forks better. Sow on oat stubble; or wheat stubble is probably better for hay. Sow in corn. When you lay it by it will always pay in stocking and enriching land. In most cases it will give a fair yield of peas. I would suggest to any one desiring seed peas, that Memphis, Tenn., is a fine market to find them in season.

J. W. Day.

Crystal Springs, Miss.

A SINGULAR GREENHOUSE AT YELLOWSTONE PARK.

Near the large hotel at Upper Geyser Basin is a curiosity in the shape of a greenhouse. As it was difficult to get material for such a structure in this remote place, the walls are principally if not entirely made of slabs that were picked up, probably from timber used in making the great hotel. The walls are all of slabs, and the only glass in the structure is in the roof, which all slopes in one direction. The owner told me that, at the time he made it, he did not know enough about greenhouses to even place it so the roof would slope toward the south. Perhaps it is just as well that he didn't, for it would have been much hotter in the summer time. The glass for the roof was evidently pieces picked up, for the lights were of many different sizes. Although the temperature in that locality goes down low enough to freeze mercury in winter, the house was not made anywhere nearly as tight and secure as we make our greenhouses here in the East. The source of heat is one of the boiling hot springs, and the house is filled with steam more or less at all seasons of the year, winter and summer. The heat of the spring warms the house sufficiently. Now for the wonderful results:

At the time I was there in August, cucumbers and tomatoes were the principal crops grown. The owner had evidently given it but little attention, for the beds were not all occupied. Although I did not take any measurement, I should guess the house was 20 feet wide and 40 or 50 feet long. One single cucumber-vine occupied a great part of it. He told me this vine had been growing winter and summer for two seasons, and from the looks of it I should say his statement was true. The soil was pretty rich in the beds, made so with something that looked like sheep manure. He said he did very little watering, and, in fact, he thought the steam that was all the while making every thing drip would keep things growing without any other irrigation. There were green and ripe tomatoes at the time, and lots of cucumbers setting, but none quite large enough for the table. These were picked as fast as they became of suitable size for the big hotel close by. I happened to look down under the bench, however, among the vines, where a very fine cucumber had grown unobserved. My good friend very kindly presented this to me as a reward for my careful scrutiny.

This large cucumber-vine did not seem to be all growing thriftily; but new bright green thrifty shoots were starting out here and there, blossoming and bearing cucumbers. One thing that surprised me was that neither in Florida, California, nor in Bermuda did I find a cucumber-vine that had gown continuously as this one had. Will some of the friends in these tropical climates inform me whether it is usual to find cucumber-vines more than one year old bearing continuously?

Now, here is the astounding part of my story: Nobody stays in Yellowstone Park over winter; but a government official, in making explorations on snowshoes, came to this greenhouse in the depth of winter, and found cucumbers of all sizes — a great abundance of them — growing quite luxuriantly. Notwithstanding there are openings in many places where I think a cat might jump through, the hot springs under the bench where the cucumber-vine grows had furnished heat and steam enough to crowd the cold out. When shut up for winter I suppose the steam would be forcing its way out of all the crevices so as to keep the terrible — not *zero* weather, but weather away down below zero—out. From the looks of the vine I feel sure it has been growing, certainly all the past winter, in the way my informant describes. Now, this being true, why in the world is not the house so hot during July and August as to kill every thing? Well, to tell the truth, I can not answer. There is no ventilation at all in the roof. The only ventilation is through a small window in one gable end, and a good-sized door in the opposite end, and the slope of the roof is, I think, toward the northeast. I presume all plants will thrive as well as tomatoes and cucumbers. Grand Rapids lettuce was doing tolerably well. Very likely the moisture and heat combined would produce too rank a growth for many vegetables to bear fruit properly. Of course, this locality would not be the place to grow crops in winter for our large cities, for it is almost a hundred miles from any railroad station; but as there are hot springs scattered through Idaho, Wyoming, and Montana, I think there is a wonderful opening for somebody who will find and buy one of these springs near a railway station. In fact, I was told a movement was already on foot for such an enterprise. When I first visited California I continually protested because nobody was making use of this kind of heat for growing tropical plants. At San Jacinto, Cal., a hotel sanitarium was running hot water long distances through pipes, to cool it off so they could use it for drinking and other purposes. At the same time, this hotel was paying tremendous prices for firewood to heat their *stoves* in winter. The hot water that they cooled off outdoors could have been conducted through their hotel almost as cheaply as where I found it.

In some of the European countries, I understand, they are using hot springs for growing beautiful pineapples. Why can not somebody do the same thing in our Western States? Can anybody tell me how much progress has been made along this line? If such a work is not "High-pressure Gardening" in very truth, then I do not know where you will find it. You may be aware that I have been using exhaust steam for these many years past in a similar enterprise. But one great trouble has been that my stuff would get too hot; and during our zero weather my strawberries would be, figuratively, cooked on one side and frozen on the other; and yet this greenhouse that I have described seems to have gotten around all of this trouble. I could not dispute it, for there was that gigantic cucumber-vine. I suppose many of our readers have read of the success recently obtained by the Missouri Agricultural Station in forcing rhubarb in the open ground by running steam between the plants, say once or twice a day during severe weather. This warms the ground to such an extent that stalks were forced fit for market, in the open air, without any covering except coarse manure.*

---

*A full report of this will be found in the *Market Garden* for June, 1898. Address Market Garden Co., Minneapolis, Minn. The plan has been worked successfully for two winters by J. E. Whitten, horticulturist, Columbia, Mo.

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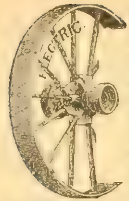

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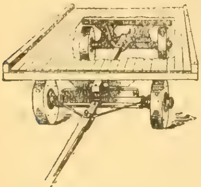

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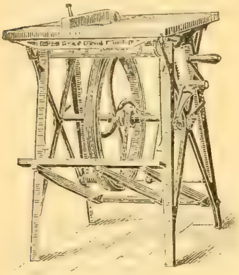

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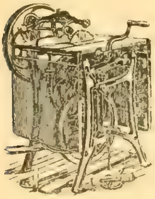

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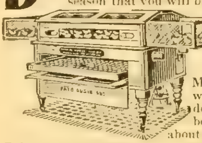

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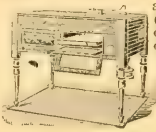

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SPECIAL NOTICES BY BUSINESS MANAGER

HONEY MARKET.

The demand for honey continues brisk, and the supply limited. Since our last issue we have received from Wisconsin nearly half a car of nice white comb honey, which has enabled us to fill our orders and furnish others who were waiting. This lot is going rapidly, and very soon will all be shipped out. We have more engaged from the same quarter, which will arrive soon. We are selling fancy white at 14 to 15 cts.; No. 1 white, 13 to 14 cts., and other grades lower. Shall be pleased to hear from those in need of honey, either comb or extracted.

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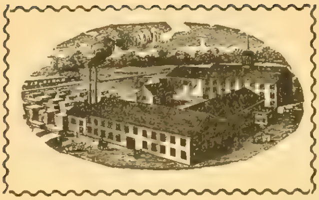
GARDENING FOR OCTOBER.

Now is the time to plant out basswood trees. And, by the way, just take a look in the nurserymen's catalogs and see what they charge you for basswoods compared with our prices. The reason why we are away down below the fruit-tree men is because we are anxious to introduce the basswood for the benefit of bee-keepers. A basswood once started yields honey for a lifetime, and probably during the lifetime of your children; and at the present time I believe there is no other plant or tree known that yields as much honey, for the amount of ground it occupies, as basswood.

Asparagus and horseradish roots can also be put out now; but I would rather advise putting out asparagus-roots in the spring. Horseradish is never winter-killed, so far as I know. People who have had experience can also put out strawberry-plants in October, and have them live. If this weather continues they may make quite a growth. In fact, strawberries do grow more or less all winter long. For those who wish to try it, we will make the following low prices: Jessie, Rio, Sharpless, Warfield, Bubach, and Haverland, 10 plants for 10 cts.; 100 for 50 cts.; 1000, $4 50. Marshall, Brandywine, and Wm. Belt, 15 cts. for 10; 75 cts. per 100; $6.00 per 1000. Carrie and Margaret, double the above prices. Nick Ohmer we will furnish 10 plants for 40 cts.; $2.00 per 100. If wanted by mail, add to the above prices 5 cts. for 10, or 25 cts. for 100, for postage. If you have not had experience in setting out strawberry-plants in the fall, it might be well for you to invest in a few, say 10 of each of some of the best kinds; then if you succeed all right, next time you can venture more largely. A strawberry-plant put out in the fall will be away ahead of one set out the following spring providing you do not let the frost kill it by heaving it out. Mulching with coarse manure, properly applied after the ground freezes the first time, will stop the heaving-out business if it is put on right and the plants properly cared for.



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Honey Column.

CITY MARKETS.

New York.—Demand for honey very good at steady prices. Receipts during the past few weeks have been fully up to the average years. Fancy white honey in demand; other grades of white and buckwheat in plenty. We quote market to-dav as follows: Fancy white, 13½@14½; fair white, 12@13; buckwheat, 8½@10; amber, 9@11; mixed, 9@11. Extracted.—Our market is in good shape for all grades; would suggest shipping now. We quote as follows: White clover, 6@7; amber, 5½@6½; buckwheat, 5@6; Florida white, 6@7; Florida light amber, 5½@6½; other grades of Southern honey, from 55 to 60c per gallon, according to the quality. Beeswax.—Our market during the past week has shown a slight improvement, though we do not anticipate much more advance for some time to come. We are selling at 25½@26½.. When shipping, we would ask that all packages be marked plainly, the gross, tare, and net weight.

Francis H. Leggett & Co.,
Oct. 25. Franklin and Varick Sts., New York.

Milwaukee.—This market continues to offer good encouragement to shippers of *best* grades of honey, either comb or extracted. The receipts of new crop have been fair, and the demand has been good, and the market assumes a firmer tone on the fancy grades, and we try to sell honey on its merits so as to encourage straight packing and uniform quality. We will now quote fancy 1-lb. sections at 12@13; A No. 1, 12@12½; No. 1, 11@12; No. 2, 10@10½; mixed, amber, and dark, 8@9; extracted white, in barrels and kegs, 6½@7; dark, in barrels and kegs, 5@5½; beeswax, 26@27.

Oct. 18. A. V. Bishop & Co., Milwaukee, Wis.

Denver.—We can not see much improvement since our last report. The receipts of both comb and extracted honey have been very satisfactory. There is not the demand for comb honey on this market that there used to be, on account of extracted honey being placed on the market in the proper package, and in its purity. We can still quote No. 1 white comb at 11½ in cartons; best No. 1 white extracted at 5½@6. There are large quantities offered. Beeswax can be bought for 20@25.

R. K. & J. C. Frisbee,
Oct. 21. Denver, Col.

New York.—Receipts of comb honey are large, and there is quite a stock now on this market. While white is in good demand, mixed and buckwheat seem to be somewhat neglected, and quotation prices will have to be shaded in order to sell in quantitv lots. We quote fancy white, 13@14; No. 1 white, 11@12; amber, 10; dark and mixed, 8@9. Stocks of extracted are light of all kinds Demand is good at following prices: White clover or basswood, 6@6½; amber, 5½; dark, 5; Southern, in bbls., at 55@60 per gal. Shall be glad to hear from those having extracted honey for sale in any quantity. Beeswax, dull at 26.

Hildreth Bros. & Segelken.
Oct. 22. New York.

Philadelphia.—Honey is selling very freely, but there are large arrivals from York State and Northern Pennsylvania. There seems to be a large crop of Eastern comb honey, as in former years. We quote fancy comb, 14½; No. 1, 13½; amber, 9; extracted white clover, 7; light amber, 5½; buckwheat 5; beeswax, 28. We are not receivers but producers of honey.

Wm. A. Selser,
Oct. 20. 10 Vine St., Philadelphia, Pa.

Albany.—No change to note in our honey market since last issue. Fancy white sells at 14; No. 1 clover, 12@13; No. 2, 11@12; mixed, 10@11; No. 1 buckwheat, 9@10; medium, 8½@9; extracted white, 6½@7½; mixed, 6@7; dark, 5½@6. We are short of extracted, and have advanced quotations some.

MacDougal & Co.,
Successors to Chas. McCulloch & Co.,
Oct. 18. Albany, N. Y.

Chicago.—Fancy grades of white comb sell freely at 13c, with good grades from 11 to 12½, according to finish. Ambers bring 8@10, with dark, mixed, and uncleaned, 7@8; extracted white, 6@7; ambers, 5@6; buckwheat, 5; beeswax, 16@17. The market is active, and nearly all consignments are sold soon after arrival.

R. A. Burnett & Co.,
Oct. 18. 163 S. Water St., Chicago, Ill.

Columbus.—Fancy comb honey still in light receipt, and demand good. We want all grades of comb honey, and will advance money on all consignments. Fancy, 14@15; No. 1, 12@13; No 2, 10@11; amber, 9@12; buckwheat, 8.

The Columbus Commission & Storage Co.,
Oct. 18. 409–413 N. High St., Columbus, O.

Boston.—We note a fairly good demand for honey, with a good supply. Stock now here grades very largely A No. 1 and No. 1 with but a small percentage of strictly fancy. We quote fancy 15; A No. 1, 14; No. 1, 13@14; No. 2, 11@12; beeswax, slow sale, 25@26.

Oct. 16. Blake, Scott & Lee, Boston, Mass.

Cleveland.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½ light amber, 11; buckwheat, 9. Extracted, white, 7; light amber, 6.

A. B. Williams & Co.,
Oct. 18. 80-82 Broadway, Cleveland, Ohio.

Detroit.—Fancy white comb in good demand, and better prices are obtained: viz., 13@14; No. 1, 12@13; fancy dark and amber, 10@11; extracted white, 6@7; dark, 5@5½; beeswax, 25@26.

M. H. Hunt,
Oct. 21. Detroit, Mich.

Minneapolis.—Fancy white-clover comb, 12½@13; No. 1, 11½@12½; amber, 10@11; darker, 8@9; extracted fancy white clover, 7; amber 5½@6; darker, 4@5.

Oct. 19. S. H. Hall & Co., Minneapolis, Minn.

For Sale.—A few barrels and a number of 60-lb. cans of fine amber honey from fall blossoms—goldenrod, Spanish needle, heartsease, and aster mixed. Prices on application. Sample for 2-cent stamp.

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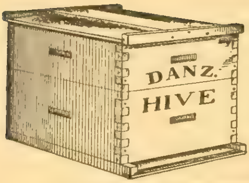

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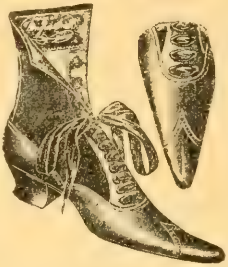

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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

MOTH-BALLS or naphthaline is reported in *L'Apiculteur* as successful in driving ants out of hives.

ON PAGE 781 is an item stirring one all up to expect low prices on basswoods, only to find no prices at all given.

TOMATO-PLANTS laid in hives will drive ants away, according to a writer in *Leipziger Bztg*. [I don't believe it.—ED.]

PROPOLIS differs in different places as to color, stickiness, etc.; and doesn't it differ in color, etc., at different times in the same place?

IF WEAK COLONIES are to be united, be sure to unqueen the ones to be moved, a day or so before uniting, then they'll stay much better where put.

PURE PEPPERMINT honey is very clear, having at first a somewhat sourish taste upon the tongue, and is fine to mix with clover or linden honey, to which it lends its peculiar flavor.—*Lpzg. Bztg.*

SOLID SECTIONS of honey may sometimes be profitably used to feed by putting them under the bottom-bars where there is a two-inch space Looks a little extravagant, but it's better than starvation.

BLACK BEES, E. W. Brown says in *A. B. J.*, were the only ones that worked for him on linden, his Italians continuing on white clover. That's hardly the general rule, is it? [I don't know.—ED.]

FOR CRACKED HOOFS of horses, melt honey and wax over a slow fire; cleanse thoroughly the hoof; apply the mixture along the cracks and in the surrounding hair. Repeat a few times, and hoof will be sound.—*De Bie.*

DON'T LET any one bamboozle you into the idea that you can handle bees as well with gloves. [Tut, tut, doctor. If you do not look out, R. L. Taylor will "bamboozle" you for using slang.—After I had written that much I took a look at the dictionary, and, sure enough, it is an authorized English word, meaning "to deceive."—ED.]

THE QUESTION still haunts me: "When the queen does wrong by laying out of the center of the cluster, although doing as nearly right as circumstances will allow, and thus departs from Nature's plan, whose plan is she following?" [I don't know.—ED.]

DELIGHTFULLY INGENIOUS is that strainer (isn't it a skimmer rather than a strainer?) of F. E. Brown, page 763, middle of second column. Better turn back and study it up if you didn't notice it. [I am glad you called attention to it, doctor. Perhaps I had better have a picture of it.—ED.]

ENDS OF SLEEVES attached to gloves are fastened to the shoulders, say you, Mr. Editor, p. 769. If you had been a woman you would have noticed that a strap fastened the sleeves together at the back, and another strap buttoned in front. [If Mrs. R. had been describing the method of fastening the sleeves, quite likely she would have been more exact.—ED.]

SWARMING was thus prevented by a correspondent of *Revue Internationale:* He closed for 18 days the regular entrance, making an entrance to the super. The six colonies thus treated didn't swarm, but filled their supers, while the rest of the apiary swarmed. [I can not see *why* this change of entrance would stop swarming; and is it not possible that the honey in the supers would ripen more slowly because of the proximity of the opening?—ED.]

WHITEWASH for hives is strongly recommended in *Revue Eclectique.* Nothing has been said about it for some time in this country. Is it still used, and is it liked? [Years ago we used whitewash for hives; and while they looked nice the covering did not add to the durability of the wood. Durability is of prime importance, and looks, secondary. But whitewash would be almost as good as some of the cheap liquid paints that are now on the market.—ED.]

SOME 700 PERSONS were present at the late convention of German bee-keepers at Salzburg. Did I hear some one say something about the Germans being a slow people? I read once of a bee convention which 500 *were* going to attend in this country, but I never heard of one that so many *had* attended. [If you will cut down our geographical distances, doctor, or, better still, give us railroad mileage of half a cent per mile, I will guarantee that we can have a convention of at least 500 bee-keepers.—Ed.]

HONIGKUCHEN. Bring 1 lb. extracted honey and ¼ lb. butter to a boil. Let cool for 10 minutes. Add 1 lb. flour, ¼ lb. ground almonds, ⅓ teaspoonful of cloves, the grated peel of a lemon, and a scant teaspoonful of soda dissolved in a little hot water. Mix, and set aside over night. Next morning, roll out ½ inch thick, cut in small squares, press an almond in each corner and in the center, and bake in a moderate oven.—*Chicago Record.*

"EVER SINCE we have begun using loose bottom-boards, and raising the hives in front in hot weather, we have avoided the breaking-down of combs by heat."—C. P. Dadant in *American Bee Journal.* Is there no mistake about this? Somewhere I think I have seen it stated that on a hot day it is cooler in the hive than out, and that raising the hive only makes it warmer. [Why should there be any mistake about Dadant's statement? It appears to me to be entirely within the limits of the experience of some others.—Ed.]

WHOOP! WHOOP! hurrah! lots of us outsiders are glad a quietus has been given to Medina saloons. [While we rejoice over our victory we realize that it would be folly to rest on our laurels. In any temperance fight, it is necessary to keep continually on the alert, else the Devil would be sure to take advantage of us. He is never asleep, you know. If more of the churches would send their preachers and their best laymen to the polls to work for the cause of righteousness, there would be less of wickedness in high places.—Ed.]

"SHOULD THE QUEEN be clipped? A bee-keeper inquiring on this subject, Mr. E. Root, the editor of the American journal, GLEANINGS, replies that he has clipped queens for more than 50 years, and finds it to his advantage."—*L'Apiculteur.* I didn't suppose Ernest had begun clipping so long ago. [I can not imagine where *L'Apiculteur* got its information. I first saw daylight something over 36 years ago; but it was not till I was about 15 years old that I had much if any thing to do with bees, so that my apicultural experience all told comes inside of about 20 years. Latterly, it is true, we have practiced clipping, but for only about two years—quite a difference between that and fifty.—Ed.]

DISPUTE about feeding, p. 766, between Messrs. Doolittle and Root. Both right. The man who has bees to feed late should take no chances feeding half-and-half sugar and water. But if he's wise he'll not wait so late that he'll have any need of cookery. I fed 600 lbs. of sugar this year, with no cooking and no stirring. I just dumped sugar into the feeder, then poured water on it. [We have made syrup cold by mixing sugar in the proportion of one-third water to two-thirds sugar, but it took a little more stirring; but I suspect that, after all, when it is necessary to feed late, Doolittle's method of mixing syrup will be better; but I never could see that syrup granulating in combs back to sugar made any trouble so far as wintering is concerned. —Ed.]

THAT LOSS OF STING does not necessarily mean loss of life, M. Vesigne (*Revue Internationale*) satisfied himself after this fashion: He put a live mouse into an observatory hive, and stirred up the bees, at the beginning of winter. The mouse was hidden by bees, which left their stings by hundreds. Number of dead bees next day — *seven!* [Look here, doctor; you did not finish your story. We are all at sea as to whether that mouse lived or died. You will remember how, some years ago, we caged several bees that had lost their stings, along with other bees that had their stings, and that one lot lived as long as the other. I know it is generally thought that bees die immediately after losing their stings; but it is high time the myth were exploded.—Ed.]

M. GENONCEAUX, director apicultural station at Huy, says, in Sept. *Rucher Belge*, that foul-broody honey should be boiled 2½ hours, or kept at 195° for four hours. Critic Taylor called me down for saying boil 2½ hours, saying he thought 15 minutes enough. Possibly Bro. Taylor is giving dangerous advice. [It would be interesting to know whether Mr. Genonceaux found that some of the germ life, or spores, after two hours and a quarter of boiling, say, were still alive. Personally I should be inclined to believe that Taylor's statement was correct. We have fed foul-broody honey brought to a temperature of about 180, or about as hot as it could be made with a steam-pipe, and kept it there for ten or fifteen minutes. No foul brood resulted from this honey. Now, perhaps this honey was not infected, so it would be interesting to know further in regard to Mr. Genonceaux' experiment.—Ed.]

I DON'T KNOW for certain, but I imagine there's some imagination in the talk about the tenderness and fine edible qualities of comb in sections, its being friable, etc. I doubt whether the flavor of the wax is ever noticed by one eating biscuit and honey. At any rate, I always prefer the honey that has run out on the bottom of the plate. One thing I know for sure: Comb ten years old, that has been out of the hive in a dry place for five years empty, is more friable than comb made two months ago. [Extracted honey very often comes from old combs, and if it be in that comb six weeks before it is thrown out it would acquire no added quality in the way of flavor. The honey that is stored in sections is stored in *new* comb, and may remain in that comb anywhere from two weeks to two years before it is eaten. Suppose it is consumed, as it would be in the majority of cases, within six months from the time of coming off the hive. Now, *suppose* again that there *is* a peculiar flavor to wax, would not more of that flavor be imparted to the honey stored in sections than that stored in extracting-combs? Understand I do not claim that wax has a flavor of its own.—Ed.]

General Correspondence

LARGE HIVES.

Swarming with Large Hives; How a Queen Lays Her Eggs; Importance of Plenty of Room.

BY C. P. DADANT.

In considering this question of the adoption of large hives, one of the principal things we have had in view was the prevention of swarming. With some apiarists this is a matter of small importance. Either they wish to increase their colonies in numbers, or they have sale for the swarms, as used to be the case some twenty-five years ago; or perhaps they expect to make up for winter losses with the natural swarms harvested.

With us the case was different. We have had as many hives of bees as we cared to manage, for twenty years or more; and even from the beginning we foresaw that swarming would always be an annoyance to us that would not be compensated by whatever advantages there are in natural swarming. In the first place we have a number of out-apiaries, and the farmers are not always on hand when the bees swarm, so that the bees are not as well taken care of as we might wish at swarming-time. In addition, when the average amount of natural swarming is expected, one has to keep on hand quite a stack of empty hives, ready to receive the bees. Then it very often happens that, when the bees get the swarming-fever, they swarm themselves to death, and cast off, at the last, such puny swarms that they must either be returned, or fed for winter. With large hives there is less swarming, as the queen more readily finds cells in which to lay the eggs that are produced so rapidly that she must lay them in cells or drop them on the floor of the hive. And while I am on this subject, let me suggest that it is at least a mistake to figure up a certain number of cells for the use of a prolific queen, and to expect that *she will fill all these* if she is sufficiently prolific. The queen works in the dark, as do all the bees; and, although she can probably see in the dark, she surely does not know where all the empty cells are located. It is certain that she lays as the bees work, with a great deal of method; but for all that, if she has been allowed just the space that she can fill, and no more, do not my readers think that she will lose a great deal of time in hunting for empty cells? We all know in what manner a queen lays. She starts in the middle of the cluster, in the warmest portion of the hive, puts her head into a cell to make sure that it is empty and clean, then inserts her abdomen into this same cell, remains a few seconds motionless, then withdraws and goes to the next. She keeps on circling around this center till she comes to the edge of the comb or to the edge of the cluster, if the weather is cool. In warm weather she is not disturbed in her circle till she gets to the edge of the comb, when she quite often loses considerable time in regaining the thread of her work. Any one who has opened hives often has seen how regular the patch of brood is as long as it is round. But they have also noticed how irregular the laying often is at the ends of the comb. Shallow hives have a decided disadvantage in this respect, as in several others, and that is one reason why we preferred the deeper frame, Quinby style.

But when the combs have been more or less filled with brood, it is then that the queen is apt to lose considerable time in hunting for more cells, and thus wastes valuable eggs, which, as our old authors used to say, "drop like ripe fruit when they are mature." Yet are we not all agreed that we need those eggs in the early part of the season? We can not too often repeat with Hutchinson, "We need to raise all the bees possible before the opening of the main harvest. We must have the workers, or the harvest will be in vain." Thus we came to the conclusion that we must have plenty of empty cells, enough so our queens would not get overcrowded, at least until the bees begin to bring in the honey. When a queen has plenty of room, one of the biggest incentives to the prevention of swarming is removed.

Don't understand me to say that, with large hives, you will have no swarms, for this is incorrect; but if you want to prevent swarming, to the greatest possible extent, you must, first of all, have large hives. Other things are required, such as the removal of the excess of drone combs, plentiful ventilation, a supply of surplus combs, etc.; but the *sine qua non*, in our eyes, is large hives.

With a little care it is not difficult to keep swarming down to such a point that the natural swarms will barely make up for winter losses. In our case we find it insufficient, and we resort to artificial swarms or divisions, which we find much more satisfactory, for we can breed from the queens that we prefer, and, at the same time, keep our best colonies for producing honey. Every practical beeman will agree that it is the large colonies that give the large crops, whatever may be his opinion as to the size of hive needed.

But if we *must* have swarms, with large hives they will be large, take my word for it. They will be none of Colin's six-pounders. Dare I say that they will even be larger than those harvested by our supporters of the eight-frame Langstroth hive? If they are not large, the queens are to blame. Allow me to remark that the bee-keeper with a large brood-chamber has a much better chance to judge and compare the prolificness of his queens than has the apiarist or even the scientific man who makes his hives just large enough for the average queens, or, rather, what he *thinks* to be average queens. The very best queen in the country may be kept in a one-frame observing-hive, and yet may not fill it full of eggs. Will that condemn her? Put this same queen on ten or twelve frames, with a good retinue, and see what she will do. It is only by giving her a chance to expand her faculties that you will be able to pass judgment upon her. The very best tendencies become abortive in unfavorable circumstances. Edison could not have invented what he did had he been raised among the Hottentots. This comparison may be a little far-fetched, but it expresses my thoughts in a plain and forcible way.

I have no doubt that some others, in the same circumstances, and with the same experience that we have had, might have come to different conclusions; but no one should condemn a system which is plausible, and based on the experience of many years, without first giving it a trial.

In another article I will make a comparison of large and small hives for wintering, with our experience in the matter.

Hamilton, Ill.

[I presume it is almost unnecessary for me to state that the foregoing, so far as it relates to swarming, is quite in line with my own experience.

Mr. Hutchinson, referring to these Dadant articles, suggests that we should not lose sight of the fact that Mr. Dadant runs his bees for *extracted* honey, and that, therefore, swarming is more easily controlled. I would ask Mr. Dadant whether, if he were to produce comb honey exclusively, he would make his brood-chamber smaller; if not, would he, in his opinion, be able to control swarming to the extent that he now does? For my own part, I do not see why these big colonies would not produce comb honey about as well as extracted—perhaps not so large an amount. But, as I stated to Mr. Doolittle elsewhere in this issue, we should not lose sight of the one element of locality. I am ready to concede that, in some places, yes, perhaps in many, the smaller hives might give a better result in comb honey.—ED.]

HOW TO REQUEEN CHEAPLY.

The Best Method for the Bee-keeper who Runs a Large Number of Colonies.

BY DELOS WOOD.

It seems strange to me that so many bee-keepers spend so much of their own labor in trying to save work for their bees. This may do for those who keep a few bees "for fun," but with me it is a matter of bread and honey, or, in other words, I keep bees for profit, and I want them to save work for *me*. Farmers do not spade up their ground to save work for their horses. They make the team plow the ground to save work for themselves. I had thought to throw out a few hints on this subject in regard to queen-rearing, but supposed it too late in the season; but your note on Dr. Miller's last Straw, Sept. 15th, has caused me to write this article.

Perhaps a professional queen breeder like Mr. Doolittle can afford the time to make artificial cell-cups and grafted larvæ; but I am sure the honey-producer can not. Neither can he afford to hunt up queens day after day, to keep those first hatching from destroying the others. I believe that the man who produces tons of honey each year can also produce as fine queens as any one who does nothing but rear queens. One colony will produce hundreds of the best queens during one season, and store a fair amount of honey, and, I think, with less labor than by the Doolittle plan.

I would set apart my two best colonies of Italians, one for rearing drones and the other for queen-cells. To the one for drones I would give a large amount of drone comb. The other I would stimulate by feeding, to induce the swarming-fever, giving plenty of worker comb in two story hives, so as to get as large a swarm as possible. This swarm with the old queen I would put into an empty single-story hive, and let them build comb in as many frames as possible. After the queen has begun to lay a small circle of brood in several combs I would take her from the hive and give her a new colony. I would then take each of these new combs of brood and cut around through the circle of cells, just in the same ring that the queen lays, leaving the larvæ (just hatched) at the bottom of the piece of comb left in the frames, taking off the lower part of combs containing only eggs. These larvæ are hatched, usually, the third day from the time the eggs were laid. The bees are now in their best condition for all kinds of work, and will build queen-cells by wholesale, and of the best quality, and will put them on the bottom of this cut comb, which, being cut in the shape of the edge of a saucer, will cause the ends of the cells to spread out from each other as you can spread your fingers apart. This gives room to cut out each cell without injury to any other.

These eggs were laid within a few hours of each other, and will all hatch at the same time, and may all be removed to the nuclei at one time, and the young queens will all, or nearly all, begin to lay at the same time. These queens will be raised in a full colony, under the natural-swarming impulse, and will be "the best queens in the world." If one chooses to watch the old colony awhile, many good queens may be obtained from that. Queens raised in this new comb are, I think, apt to be brighter than those reared in dark combs. Advocates of leather-colored queens should hive the swarm on old combs.

Your engraving on p. 685 shows the comb cut with the circle the wrong way; and if you had not used the cell-cups, and placed them widely apart, the points of the cells built from larvæ in the comb would have been likely to touch each other. The colony used as I have said will build several lots of cells before becoming discouraged; and by giving an occasional comb of hatching brood it may be kept building cells almost indefinitely. Perhaps one trying to supersede a queen might keep it up longer, but I do not think they would build so many cells at one time as they might do under the Doolittle plan.

I have never been successful in getting good queens started from the egg. My bees, when given eggs only, will wait for them to hatch before starting cells, and by that time they seem to lose their vim, and start fewer cells, and build them smaller.

By remembering that the egg usually hatches the third day, the larva is sealed the sixth day, or nine days from the laying of the egg, and that it is sealed over seven days, and that the queen is hatching in sixteen days from the egg, there is no watching to do. Queens may be pulled on the fifteenth day, and let run in at the entrance, but I prefer to cut the cells on that day and insert them between the top-bars of the frames, without marring the combs, and let them hatch in the hive.

Please do not think I am trying to offer advice to the professional queen-breeder I have no such aspiration. I have written this chapter from my own experience, for the benefit of my busy brother bee-keepers who wish to requeen their apiaries with as little outlay of labor and time as possible.

Santa Barbara, Cal.

[I believe Mr. Wood can produce queens as he says. But one great advantage of the Doolittle cells is, they are stronger, will stand rougher manipulation, and can be spaced off on a stick just the distance most convenient for handling; and, after all, the making of the cell-cups and the subsequent fastening and grafting is not so fussy as one might suppose. When we first began working on the Doolittle plan it seemed to me it was utterly intolerable, especially as I thought we could get the bees to do for us that which we might attempt to do at a greater expense; but I must confess that the actual working-out of the plan is simpler and more expeditious than it actually reads on paper. But I do most heartily indorse the idea at the opening of Mr. Wood's article, of making the bees save their owner work as far as possible. The first time I ever attempted to handle a two-horse plow I thought it was necessary to drag the great big tool around each end of the furrow. My Canuck brother-in-law, John, let me proceed in this way for a few furrows, and then showed me how much easier it was for me to let the horses do the dragging—that is, deposit the plow at just about the point I desired to begin the new furrow.—ED.]

* * *

FROM THE EGG TO THE BEE.

Observatory-hive Work.

BY FR. GREINER.

In regard to the question, "How much time is required to bring a bee from the egg to maturity?" bee-keepers have not all been of one mind, so it seems, although our bee-books say 21 days, or perhaps 20 to 21 days. I have seen it stated by some one recently, that 19 days is the allotted time; but, generally speaking, 21 days is commonly considered the usual time. Our friend Doolittle speaks of the matter in the Sept. 15th issue; and when *he* makes a statement of that kind, there is no room for doubt. I made some observations along the same line last summer, and I might add some minor points to what he says, that may be of interest, so I will tell you about it.

To begin with, the hive I used to make my experiments with is of a peculiar construction, the ends being composed of sections clamped together with Van Deusen hive-clamps in such a manner that, by removing or adding such sections, the hive may be contracted or expanded so as to accommodate any number of brood-frames from one to ten or more. The sides of the hive are glass. A large pane on each side shows the whole side of a comb next to it. When a number of combs are used, the hive may be pulled apart anywhere without giving the bees a moment's warning, thus quickly gaining access to the center or any part of the hive at any time, perhaps surprising them.

Not wishing to experiment with a one-comb colony for various reasons, I established, Aug. 1st, a four-comb one in this hive by simply taking from a very populous colony four brood-combs with bees adhering, adding some more bees by shaking from two other combs all the bees that would naturally be on them. Our thus newly formed colony was carried to a new location, giving the bees a place by the window in my reading-room, facing southeast, and allowing them to fly through a hole cut through a two-inch piece of pine inserted under the slightly raised sash. The bees were the genuine black, or native, and I gave them a very light-colored Italian queen caged in a common wire-cloth cage that I placed in one of the lower corners of an outside frame from which I had previously removed a piece of drone comb. The queen was liberated by the bees the first day after forming the colony; and when, a few days afterward, I pulled the hive apart so as to remove the queen-cage, I saw her walking quietly among the bees on one of the central combs. After the removal of the cage the bees filled out the space again, with drone comb, as I had expected and hoped.

About this time we were having the very warmest kind of weather. Buckwheat was yielding some honey, and I kept feeding moderately besides. Aug. 13th I caught my queen in the act of laying eggs in worker-cells as well as in the recently constructed drone-cells, right in the outside comb next to the glass, and every such cell was immediately marked with colored ink on the pane of glass. I then kept close watch of those cells. It bothered me, many times, to see and distinguish things, but I received great benefit from a strong lamp with reflector, and by using a mirror with which I could throw the sunlight directly on the comb. In due time I saw the little larvæ, and noticed from day to day the increase in their size. At no time did I see a larva stretched out, or, in other words, occupying a cell lengthwise. They always lay curled up in their respective cells. A part of the worker larvæ were capped over in 8 days and 14 hours; all of them within 9 days. No changes could be observed on the now capped cells for eleven days. Sept. 2, at 9 A. M., I discovered some bees emerging from those cells in which I saw the queen lay eggs Aug. 13th at 7 A. M., making the time of growth and development 20 days and 2 hours as the shortest time. All bees emerged from the marked cells in less than 21 days except one, and this I lost track of. On the 21st and 22d of August I again found the queen depositing eggs in the outside comb next to the glass. Timing her I found she would lay at the rate of one egg in 2 to 2½ minutes counting all the time she was running around pellmell, examining and finding such cells as suited her, but not the time occupied when attendants were feeding her, which happened frequently. At a previous time when I watched her depositing eggs she was carrying on that business at about the same rate, or perhaps 600 eggs per day. In a full colony, and earlier in the season, she might work faster, but I do not know.

The development of the larvæ from the eggs laid Aug. 21st and 22d proceeded about as before, except that the whole time, from the beginning to the full development, was a little more than in the first case. The first bee emerged in 20 days and 4½ hours; the last one, just before the twenty-one days were up.

I watched the growth and development of the drones just as carefully. The eggs were laid Aug. 13th, as I stated before. Just when the grub broke the shell I am unable to say. I suppose it was at the end of the third day. Aug. 22d, at 10 P. M., the bees had begun capping the cells, and on the following morning at 7 o'clock they were all capped, making just ten days from the laying of the egg. A slight change was noticed going on with the cappings of the drone-cells during the following 14 or 15 days, similar to that observed in queen-cells after they have been capped a little while. The more waxy outside covering was apparently removed by the workers, probably to allow a change of air. The first drone was seen to emerge Sept. 6th, at 11 P. M., making 24 days and 16 hours. The last drone emerged from the cell in just twenty-five days.

It will be seen that the time required to bring a drone from the egg to maturity was a little more than is generally conceded by other writers, while in the case of the workers it was rather less, or at least not more (except in the case of the nineteen-day man). It might be argued that my experiments have but little value because not made on a full-sized colony, which, of course, is true. They were made on a half-sized hive, for my four frames exactly equal five Langstroth frames. The little hive was full of bees to such an extent that they were often seen lying out in a big wad, especially during warm nights and during afternoons, when buckwheat seldom offers inducements. They were strong enough to work in a super, completing at least 12 one-pound sections, and starting in six more. It was also very warm during the whole time the observations were made. In fact, that period was the hottest of the season, and so it can hardly be said that the brood suffered on account of lack of warmth, or that any irregularity could have taken place.

Other very interesting observations were made during the season as to pollen gathering and storing, manipulating the bee-glue pellets, the gradual change from the black to the Italian stock, and as to whether the young bees build the comb; the length of the life of a worker, etc.

Naples, N. Y.

RAMBLE 154.

More about Mr. Richardson, the Bee-keeper who Produced Last Year 65 Tons from 1000 Colonies.

BY RAMBLER.

There has been much discussion between California bee-keepers in relation to the respective merits of the white, black, or the purple sage. From my own observation there is but little if any difference in quality or characteristics. The honey from all of these sages is classed as "water white," and the flavor, and the proneness to remain liquid a long time, is the same. If an apiary is located where there are many acres of any of these varieties, the hives will rapidly fill when the bloom is on. Mr. Richardson's apiaries, surrounded as they are by acres upon acres of purple sage, during a good year turn out honey in great abundance. One of his apiaries, so situated and stocked with 400 colonies, in 1897 made their owner happy by turning into his tanks over thirty tons of honey; and his entire output from about 1000 colonies was 65 tons. At twelve tons to the car this would require five box cars well loaded. The artist has kindly consented to show up the magnitude of this product in the accompanying illustration.

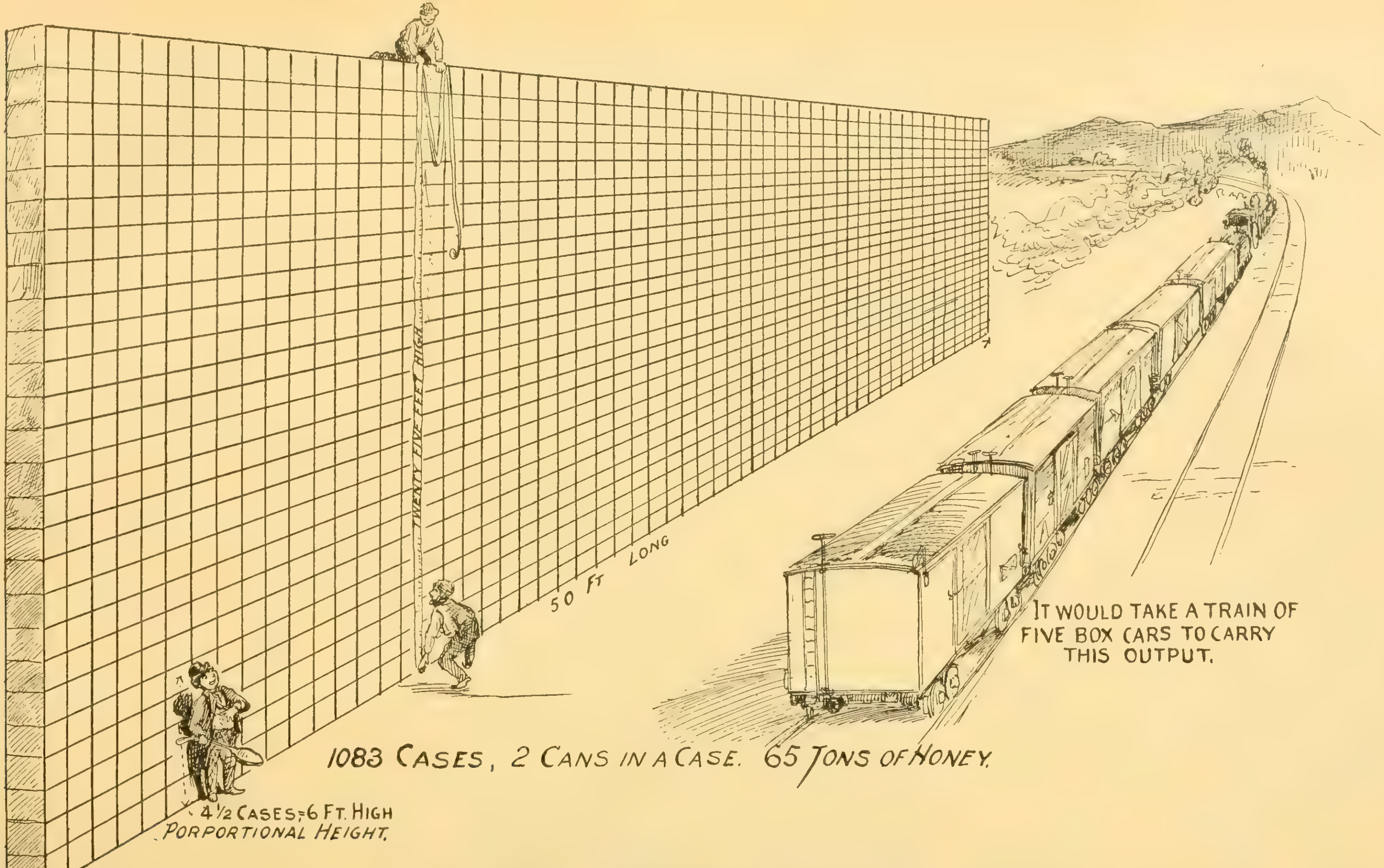
Mr. Mendleson, just over the mountains in Ventura Co., is coming well up to Mr. R. in the number of colonies and in the amount produced. If the past season had been favorable it would have been nip and tuck with them as to the total output. But, alas! the dry season may throw one or the other out of balance, and it may take a series of years for them to approach so near to the same conditions.

The bee-keepers of Ventura Co. can be justly proud of their large output of honey and of its quality. Honey from this locality always commands the highest market price. Now some might construe this as an argument that the sages of Ventura Co. produce a better honey than the sages in other portions of the State, or that it was in the species of sage; but we find that in many localities in these valleys the crop is exclusively from sage, while in other portions the sage is mixed more or less with honey from other honey-producing flowers.

Wilkin, Cory, McIntyre, Touchton, and several others are veterans in the business in this county, and all help to roll up the output to several train-loads.

The hives in Mr. Richardson's apiaries are worked, as far as possible, with two extracting-supers; and sometimes, if hives are filling up rapidly, another super is added as a check to swarming. When the men are at work in the apiary, two are in charge of the uncapping and extracting, while two remove the combs from the hives to the house.

In the accompanying half-tone two little sliding doors are seen at the lower portion of


TWENTY FIVE FEET HIGH
50 FT LONG
IT WOULD TAKE A TRAIN OF FIVE BOX CARS TO CARRY THIS OUTPUT.
1083 CASES, 2 CANS IN A CASE. 65 TONS OF HONEY.
4½ CASES=6 FT. HIGH
PORPORTIONAL HEIGHT.

ONE CALIFORNIA BEE-KEEPER'S CROP OF HONEY FOR LAST YEAR.

the house. The wheelbarrow, with its load of combs filled with honey, is driven opposite one of the doors, and the boxes are quickly shoved in and the door closed. The wheelbarrow is then moved along and the other door is opened, and the boxes with empty combs are as quickly removed to the wheelbarrow, and the robbers have no chance to get into the house or into the honey. Mr. Richardson takes the utmost care to have his honey of the finest quality, and dealers never make complaint in that respect.

There is one little point in Mr. Richardson's management wherein I think he is away behind the times. Instead of using an up-to-date Corneil or Bingham smoker he uses an old stew-pan. The pan holds about two quarts, has a strong handle of moderate length, and, when the pan is filled with rotten wood, or even sound wood, it is a regular furnace, and sends forth a rousing smoke ; but dependence must be placed largely upon the wind for directing the smoke where needed. Mr. Richardson contends that the bellows smoker is not to be depended upon at all times, needs filling often, and is expensive, while a stew-pan is cheap, and always going. He had various other grudges against the modern smoker, and I came to the conclusion that it makes little difference what kind of tool we use if we only become expert in its use and have a measure of success with it. If a person persists in ignoring an improvement, and bids us get away with our new-fangled machine, he will probably stick to his stew-pan in spite of us.

As Mr. R. controls the entire field of forage he is very careful to keep foul brood at a distance. In one of his apiaries which he increased by purchase he found about forty colonies infected. To make a sure thing of the cure he adopted the heroic method, and committed the whole of them to the flames.

Mr. Richardson practices migratory bee-keeping to a certain extent, and moves a portion of his bees to the bean-fields. This movement is made in order to help the bees to a living through a dry season ; but the honey sometimes fails to secrete, even in the bean-fields, as I understand it has this year.

About two years ago Mr. Richardson, in stepping from a moving train in the evening, was thrown violently to the ground, and for several days he lay in an unconscious condition. Mr. Touchton, a brother bee-keeper and friend, lived near the scene of the accident, and Mr. R. was taken to his residence, where Mrs. Richardson and Mr. and Mrs. Touchton tenderly nursed him back to life. Since the accident Mr. R. has not enjoyed his former excellent health ; and during the past summer he and his wife have been east in hopes that a few months from business would have a beneficial effect. Upon his return he will devote his entire attention to his ranch and his bees. He claims that many times in the past his output of honey would have been several tons more if he could have given his bees his undivided attention. Both Mr. and Mrs. Richardson prefer to live out on the ranch in the busy season. They camp out near the apiary they are working ; and so pleasantly are the days passed that one of the apiaries is termed Happy Camp.

The majestic live-oak, the pride of all Californians, grows to perfection here, and the camp is sometimes made beneath its dense foliage. To give the reader an idea of the

ONE OF W. T. RICHARDSON'S APIARIES, SIMI, CALIFORNIA size and habit of this noble tree I present a small photo of one. This tree is near the residence or home camp of Mr. R. It covers a space of 64 feet in diameter, and there is room for several families to camp beneath its branches. Mrs. Richardson is the central figure in the photo. Near her is a lady ready to mount her horse. This is the inevitable schoolma'am. No bachelors need apply, however, for she is a married lady. The other figures are the ranch superintendent and attachees.

Mr. Richardson has a host of friends, not only in the bee-keeping ranks, but throughout Ventura Co., and he is a man with whom it is a pleasure to become acquainted. He is president of the Bee-keepers' Exchange, and early in its organization it was hoped that he could become its manager.

CALIFORNIA LIVE-OAK.

On the morning when I left the Simi Valley for Los Angeles I desired to take another route home, and friend R. directed me to return via the Canejo Valley. When I was about to start he gave me the information that I might have a gate or two to open. He was right in that, and from the twinkle in his eye he must have sent me that way in order to get the full benefit of gates. When I had traversed the few intervening miles of barren country to the county road, I had shaken hands with, so to speak, and paid my compliments to, fourteen healthy gates.

In the height of a good honey season, when the sages are in bloom and the hills and plains are carpeted with a profusion of wild flowers, the Simi Valley is a beautiful country and a pleasant camping place, and many people spend their outing in its quiet nooks. Adios, Simi.

* * *

VISIT AMONG THE BEE-KEEPERS.

BY H. R. BOARDMAN.

"What are you going to do, now your honey crop has failed?" asked a brother bee-keeper of me one day. I replied, "I will go on a visit among bee-keepers who have met with better success than I have; learn all I can of my industry; prepare my bees with confidence and courage, for the next season; look forward and not backward—hope."

I did not think then that my reply was prophetic.

My first visit was a wheel-trip to the well known bee-keeper and writer, Chalon Fowls of Oberlin, and with him to Rootville, to visi the Home of the Honey-bees.

Notwithstanding a heavy downpour of rain which interrupted our program of visiting the bee-keepers in the vicinity of Medina, which we had anticipated with so much pleasure, our visit was one filled with interesting incidents and pleasant surprises long to be remembered. If I were asked what interested me most of all I saw and talked about I would answer unhesitatingly, "The manufacture of comb foundation with its various improvements." Mr. Weed, whom I had the pleasure of meeting, is devoting his whole energies and his life to the perfection of comb foundation.

"How about the Boardman plan of liberal feeding of sugar syrup before the beginning of the honey-flow to get the nectar stored in the sections? Has the plan been a success with you this season?" was asked me.

"I am as certain as ever that the plan is a success; but the season with me has been a failure, and I have secured no surplus, because there was none to get. It is a trying ordeal for my pet theory; still, I have the utmost confidence in it."

The evening was devoted to discussions of the various live topics of bee culture until quite late; and, although of much interest, to enter into their details here would be out of the question. We were treated with consideration and kindness not soon to be forgotten.

The next day, after sampling the good things on the lunch-counter, we decided to try to wheel back to Oberlin, notwithstanding the rain and mud that prevailed. We made a short but very pleasant call on Mr. Vernon Burt, a few miles out of Medina, where we got sight of some very fine and genuine this year's honey, which was truly refreshing, and where we also saw samples of work in the plain sections, with the fence separators, which were pretty near *perfection*. Mr. Burt thinks favorably of this method. He gives early liberal feeding credit largely for his crop of honey this season. Mr. Burt is a model bee-keeper. Our return to Oberlin through the mud was not relieved by many inspiring incidents. It was rather an exhibition of endurance than of skill.

My stay with Mr. Fowls will be remembered as a very pleasant and (I trust) a profitable day. Mr. Fowls produces mostly extracted honey; depends mostly upon his home market; takes pride in the quality of his honey, and expects good prices. He extracted some honey this season, but expects to feed for winter stores. I think he does not advocate this method as one of economy or profit. I was so well pleased with this trip that, a few days later, I packed my grip, and, with my wheel, boarded the train for a more extended

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DOVETAILED HIVE.
WISCONSIN HIVE
TERTOWN HIVE

tour among the bee-keepers of Michigan. I stopped in Toledo two days. In this time I visited many of the groceries and commission houses to learn what the season had produced in honey, and to make such inquiries as might occur to me in regard to it. These visits have proved a valuable source of information to me, and the grocer has, without exception, been very kind and considerate in furnishing me all the information in his power. "The workman is known by his chips" is not truer of the mechanic than of the bee-keeper. The honey found in the market is a sure index of the character and methods of the bee-keeper who furnished it; and I have been able to trace many progressive bee-keepers from the market to the apiary by this means. I found but little honey in Toledo, and that of very inferior quality, and but little disposition on the part of dealers to increase this stock at present. I should have looked some time before being able to make a satisfactory purchase had I wanted a section of honey for my own use.

There was more or less honey-dew in most of the honey that I examined. Much of the honey in the market is known as farmers' honey, brought in by farmers and slipshod bee-keepers—old and dark combs with untidy sections discolored by propolis. This inferior honey was being bought and sold mostly at prices but little below that of good grades of white honey.

I had intended to visit the Tri-State Fair in order to meet and make the acquaintance of bee-keepers; but on learning that this institution had very much depreciated in value to bee-keepers, and that they had pretty much abandoned their interests in favor of other stock, I changed my mind and went up to see Dr. A. B. Mason at his home, and spent a very pleasant hour chatting with him.

I think if a stenographer had been present to take our talk it would have furnished material for a good sized-bee-journal, and I am sure it would have taken two stenographers, as we both talked at once in order to economize the time. When we shook hands at parting we both agreed that we were always better and happier for these meetings. The doctor was blessed with a liberal supply of honey-dew this season, and he was making some experiments in feeding it back, I think for winter stores.

On the morning of Aug. 25 I boarded an excursion train on the A. A. R. R., billed for Petoskey, Frankfort, and other points in Northern Michigan, and was soon flying along on my way through the Wolverine State. For the first hour's ride my attention was attracted by an unusual amount of bee-forage. There were a good many swamps and much swampy land, and upon all of this there was a great profusion of goldenrod, boneset, wild asters, and other fall bloom. Fields of buckwheat were also quite frequent. I think I saw more buckwheat in this locality than in any other part of Michigan. I felt quite a keen disappointment in not seeing more bee-hives from the car-window, for I felt sure that a valuable crop of nectar was going to waste simply for lack of workers to save it.

The most notable feature of the day's ride was through the burnt pine country. The pine belt, as it is sometimes called, has been devastated by fire from time to time until this whole tract of country presents the most complete scene of desolation that it is possible to imagine. For miles together no signs of human life are to be seen—only blackened stumps and logs. This is the scene of the destructive fires of which we get or used to get the sensational stories not soon to be forgotten. In response to a feeble effort of nature, vegetation is timidly and slowly springing up again to replace that destroyed by the fire. In places a new growth of timber is seen springing up. At one place scrub-oaks appear; in another, pines; poplar in another place puts forth, and so on, perhaps, with many other kinds, each seeming to respond in some mysterious way to the conditions favorable only to its own growth.

East Townsend, O.

To be continued.

[Our friend Mr. Boardman called at Rootville just the night before I was to take my trip east among the bee-keepers. Had it not been for the rain and this projected trip the trio of us would have taken a general circle among the bee-keepers in and about Medina. As it was we made the best of it, talking bees up into the small hours of the night. I really wish we had had a stenographer, as many a thing was dropped that night that should have been preserved in a more permanent form. As friend Boardman says, if all that is said at a meeting of a trio of bee keepers could be printed, it would fill up a bee-journal. If friends Boardman and Fowls will favor us with another visit, and give us due notice, I will see that one of our stenographers is ready to "pot-hook" every thing said.

There is nothing, I think, that so broadens the mind of a bee-keeper as to go out among his fellows. I have learned more by coming in contact with bee-keepers, and seeing and comparing their ways and methods for a few hours, than I have learned in months of time among our own bees.—ED.]

THE IDEAL SUPER.

T Tins vs. Supporting-slats; Ten-frame Hives and Half-depth Supers.

BY W. C. GATHRIGHT.

Dr. C. C. Miller:—I have read with great interest your article in GLEANINGS for May 15, regarding the Ideal super. This was especially interesting to me because I had been thinking for some time of sending you a description of my super. I was glad that you were so favorably impressed with the Ideal, because my super is exactly the same arrangement, only mine takes the regular 4¼ section.

I began bee-keeping about eight years ago, with T supers and wide frames. I soon discarded the latter, and, not being satisfied with the T super, I took out the T tins and put in plain slats. Later I began using section-holders, and have used them for several years; but I am now making all my supers the same length as the T super, but with bottom-slats instead of T tins. Of course, I use cleated separators and plain sections.

You say that tins can be cleaned quicker than plain slats. I doubt this, if you take into consideration the time for heating water, etc. The plain slats can be cleaned faster than the section-holders, as I have tried both kinds. You can pile up the slats and sit down to do the work. There being no end blocks in the way, they can be handled very rapidly.

There is another advantage in the plain slats over the section-holders; and that is, if one sags it can be turned over with the bow side up, so that the weight of the honey will soon bring it back to the right shape.

I am aware that the strongest point of superiority of the T supers over the section-holders is their non-sagging quality. But this superiority is not so great over the plain slats as over the section holders, provided the slats are not more than 17 inches in length. The section-holders being some longer, of course they are more liable to sag. Those end blocks on the section-holders always seemed to me like a useless arrangement for filling up vacant space. Your recent writings on the size of hives, etc., lead me to believe that you are not yet quite satisfied which is the best hive. Now, after having carefully considered your objections to the eight and ten frame hives I am going to suggest, not a new hive, but a combination, which seems to me to just fill the bill. It is simply this: On a regular ten-frame hive put a super with half-depth frames — that is, frames 4½ inches deep. This will give you a hive equal to one having frames 13 in. deep; and when you want to contract you do not have to divide the brood-nest in the middle, nor reduce the width of your brood-chamber, thereby lessening the surface for super room. Divisible brood-chambers are all right, but should not be divided in the middle, but a third of the distance from the top. Your two-story eight-frame hives are on the other extreme from those having frames five or six inches deep. I claim that neither principle is the correct one, but a combination of the two —that is, deep frames below and shallow ones above.

The hive I use and prefer has 9 frames below, 7½ inches deep, and 8 above, 4½ inches in depth. These frames are all made 16½ in. in length, so they are just right for hives and supers 17 inches long inside. I adopted this length to do away with the useless space at the end of the regular supers, which are usually filled with end blocks on the section-holders.

If you find the above of sufficient interest I shall be pleased to read your comments in GLEANINGS.

Don Ana, New Mex., June 12.

[Below is Dr. Miller's reply.—ED.]

I can hardly believe that plain slats can be as easily cleaned by hand as T tins with lye, even taking into account all the time getting ready. It is true, however, they are much more easily cleaned than section-holders, and, indeed, the cleaning of plain slats can hardly be considered a formidable undertaking. That they can be reversed in case they sag is a fact of some importance. Still, the fact that the weight of the sections will straighten out a curved slat is an admission of the fault that the weight of the sections will curve a straight slat. With the proper thickness of slat, however, and the right kind of lumber, the bending of the slats will hardly be a serious matter.

You may be right in your idea of dividing the brood-chamber one-third way down. The proof of the pudding is in the eating. I never tried ten-frame hives with a half-depth story added, but I have tried the same thing with eight-frame hives, and gave it up. Having two kinds of brood-frames not interchangeable is objectionable. Of course, if there are advantages enough to outweigh the disadvantages, that's another thing. With eight frames I didn't think there were.

The eight-frame hive is so much lighter to handle than the ten that I should be loath to change. Two stories of eight frames will give only a little more room than your 1½ story of ten frames. There are times when the two stories give none too much room, and there are times when one story gives all the room needed. With abundance of super room, an eight-frame hive will accommodate a very large colony; and if more brood room is needed it can be added beneath, from one to eight frames. A super for an eight-framer is pleasanter to handle than one for a ten-framer, especially if the sections are to be made deeper. The smaller the super the more likely are the sections to be uniformly filled at the same time.

Taken all in all, I have some doubt whether any thing will be found to meet all requirements better than the eight-frame hive, with the privilege of using as many stories or as many frames as needed, for one who is working for comb honey. Still, for one who does not mind their disadvantages there are good points about ten-frame hives, and for some, no doubt, they are better. C. C. MILLER.

Marengo, Ill., Aug. 22.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE.

COMB HONEY WITH LARGE HIVES AND LARGE COLONIES, WITH NO SWARMING.

Question.—Is it true, as I see advanced by some, that, if we use large hives, we shall have large colonies when working for comb honey, with no swarming? I see that quite a few are talking that way; and if this is a fact, would it not be well for us to drop all of our former notions regarding the contraction of the brood-nest, when working for comb honey, and give all colonies a great big hive, and so let the bees take care of themselves, very largely? for it is conceded by nearly every one that *labor* is the chief factor in the production of a crop of comb honey.

Answer.—All of the older readers of the bee-papers know that I have been an advocate of a brood-chamber as small as or smaller than nearly any one else, when working for comb honey, the same holding only nine Gallup frames. These nine Gallup frames give a capacity about the same as 6¾ Langstroth frames would; and from a brood-nest of that capacity I secured an average yield of nearly 100 pounds of comb honey for each of the years between 1872 and 1883, from each colony I had during that time, spring count—a record which has rarely been excelled, and never equaled, if I am right, by any of the large-hive advocates. But I am free to confess that, without doubt, more labor is required in rightly managing such small hives than is needed in the management of larger hives. But with me it always seemed that, from the extra amount of honey obtained, I always secured enough to more than pay for the extra labor expended ; and if so, could the cry of "labor saving" enter into the problem? The question is, "Which will give the best returns for the amount of labor expended?" not, "With how little labor is it possible to run an apiary and secure any returns at all?"

But I wish to look a little at the statement often made, that "large hives will give large colonies, with little or no desire to swarm; and if any swarms do issue, they will be large swarms, not the little cramped-up things which always come from small hives," or words of that import, which are going the rounds of the papers, and which are doubtless what is hinted at by the questioner. I can look upon such talk only as a fallacy which has been passed from one mouth to another till those telling it really believe they are giving expression to words of truth; for with those nine-frame Gallup hives, I had fully as little swarming as I have had with the ten-frame Langstroth hives, and the average of the swarms was not materially different as to size in either case. I am free to admit that, were each placed side by side, with *no sections* on, the ten-frame L. hives would probably be later in swarming, and send out larger swarms; but, if I am right, no one working on the contraction plan treats his colonies in that way. With the small hive or brood-chamber, the sections are put on as soon as any honey comes in from the field, and the brood-combs are manipulated till the whole nine are *solid* full of brood and pollen ; and when in this shape, if any honey is stored at all it must go into the sections, for there is no other place for it to go. Thus started *early* in the sections, the bees become accustomed to their surroundings, and thus these fully occupied combs of brood entertain the best queen to her fullest capacity as to egg-laying; and, if so, how could a larger hive give any larger colonies, even though 100 L. frames were used? Large hives do not make large colonies any more than a large hat, worn all through our boyhood days, gives the world larger-headed men. If the queen has all the vacant cell room her prolificness requires, more room is only a damage to our crop of comb honey; for in the finding of many vacant cells in the brood-chamber, at the beginning of the honey-harvest, comes an "accustoment" to the brood chamber for storing honey, instead of the sections, and thus the queen is crowded upon with honey, instead of said honey going into the sections; and, with restricted room for her eggs, comes discontent, and from this comes the desire, and from the desire comes swarming, the very thing that we have been working to avoid.

Remember, we are talking about working for *comb* honey, or honey in *sections*, not extracted honey.

Some eight or ten years ago I was persuaded, through the urgency of a farmer bee-keeper living five miles from me, to purchase his bees, as he did not wish to bother with them any longer, so offered them to me for almost a song, and gave me the privilege of keeping them where they were as long as I wished, for 25 sections of honey a year. These bees were in ten-frame L. hives, and I have kept them in those hives, and at the same place, ever since I bought them, and thus I have had a chance to know about the workings of these hives as compared with the nine-frame Gallup hives of my home yard. The result has been that I can, by giving plenty of section room, hold these colonies at the out-yard back from swarming about a week later, on an average, than where the nine Gallup frames are used; but this out-apiary is no nearer being a non-swarming apiary than my home yard; and, in fact, I often consider them more determined to swarm than those are here; but the swarming comes a little later in the season. And this *little later* in the season has quite a bearing upon the problem of comb-honey production, from my present standpoint, for, when colonies are managed by the caging-of-queen plan, as I gave last winter (I think in the January 1st issue of GLEANINGS, but I have no time to hunt it up), this holding back a week puts them in just the right condition to take advantage of the honey harvest when it comes, with the largest kind of working force all kept together, with no desire to swarm after the manipulation. In this way I secured nearly 117 pounds of comb honey on an average from each of the 30 colonies there, this poor season, while those all about me, and that apiary, got little or nothing. But one thing I find, no matter what hive is used, or how many frames that hive contains, within the bounds of reason, either way, toward large or small brood-chambers, a given amount of labor *must* be performed, so that the "letting the bees take care of themselves" part of our questioner's query is nearly or quite a myth, if we expect to reap any great success from our bees. This labor part has been harped on so much that it has become a sort of bugbear, and a desire seems to have sprung up for a "holding of the pot to catch the porridge" sort of apiculture. Let us away with such a thought, for "in the sweat of thy face shalt thou eat bread" brings the highest joy that is attained unto in this life. To whom come the greatest joy and contentment in life? Is it not to the one who has labored and toiled patiently, day after day, till at last the problem worked upon has been fully conquered and solved? And are not the discontented ones of our day those who are eating their bread from the sweat of the faces of others? No, no! there comes no real joy in rolling around in luxury while others toil to supply that *unearned* luxury which we are trying in vain to make ourselves believe is true happiness. 'Tis far more to our usefulness and happiness to "wear out instead of rusting out."

[It appears to me, friend D., that you have overlooked in the discussion above a very important factor in the whole problem, and that is the one of locality, else perhaps you would not be so ready to pronounce the opinions and practices of others "fallacious." Last week I called upon Mr. S. A. Niver, who is at present managing the estate of the late Miles Morton. Said he, "Doolittle's methods may be all right for his locality, but they would not answer at all in this vicinity. Miles Morton used to say that many a bee-keeper, if he were to remove to Tompkins Co., would have to unlearn many of his old methods and acquire new ones." In a bee-line there is a distance of only about 17 miles from Borodino to Groton. What must be the difference between other localities separated by hundreds or even thousands of miles? You have no buckwheat worth mentioning, in and about Borodino. Your main dependence is upon clover and basswood. In Tompkins Co., later in the season buckwheat is one of the main crops.

Even at our out-yard, only two miles north of us, I can see a difference in the conditions. Our north yard is near a river, with an abundance of fall flora. Our home yard has nothing of this sort to fall back on.

Now, if there is indeed so much being said in favor of large colonies, and a consequent reduction of swarms, there must be some localities favoring such colonies. There could hardly be *so much* smoke without some fire.

And there is still another factor I think you have not fully considered. If you were running a hundred or a thousand colonies you would have to operate quite a little differently from what you now do. W. L. Coggshall, whom I also saw last week, and who runs 1300 colonies, reiterated a former statement, that he could not afford to spend much time with individual colonies. He had to work on the wholesale plan. It was results he was after, in the shape of dollars and cents.

You say large hives do not make large colonies any more than large hats make large heads, as if you felt that some one had been holding to the affirmative. But even if large hats do not make large heads, may it not be true that bandaged feet may, as in the case of Chinese girls, make a nation of limping women? and, similarly, may not small hives make scrimpy colonies? I think it is quite easy for us to combat opinions that are not entertained by anybody. Critic Taylor, of the *Review*, tried to make it appear that I believed that large hives would make large colonies, and you remember I said (page 519) that could be no more true than that big shoes would make big feet; but it is true that big shoes allow feet to grow to their proper size. —Ed.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE DOUBLE DECKER A SUCCESS.

I have taken off about 35 supers of nice rich honey from 13 colonies. We gave one swarm an extra body in spring when we took off winter cases. We just put it on top of an empty body, and gave a deep entrance to all the hives at that time. Our double decker gave us 7 supers solid full of honey; and after the supers were taken off there were so many bees we had to give them an empty super before they could all get in. We do not think that hive swarmed.

We like the deep entrance very much. Our bees used to send out about four swarms each, per season, some so late they would not live over winter, and we could get scarcely any honey from them. We think the new plan fine. I will have them all double another year. I was telling Uncle Thomas about the double-decker hive. He said, "Why, that's nothing. When I was down south during the war I saw the old farmers tip an old salt-barrel on top of their bee-hive. The bees would fill it full of honey, and then the owner would smother the bees and take the honey."

I don't see how a man like Dr. Miller can think it nice to winter bees in the cellar. Any one who can write so beautifully about roses and sunshine, and all that, and then condemn the poor bees to pass the long winter months in a cellar, is downright cruel. The idea of sweeping them up by the bushel from the cellar floor! For seven winters we have never lost one good strong swarm, that had enough to eat, by leaving them out in their winter cases. They have a good airing every sunny day. Of course, a good many fall on the snow, and die; but after all it is not so dismal as to die in the cellar. Do try to convert Dr. Miller to outdoor wintering. I believe he would feel a lot happier. S. A. Roberts.

Racine, Wis., Sept. 28.

[I tried to do it several years ago, but he would not turn from the error of his way.—Ed.]

BEE-KEEPING MORE THAN SIXTY YEARS AGO; A LITTLE SKETCH OF MOSES QUINBY IN OLDEN TIME.

Dear Brother:—I am now an old man, and have handled bees most of the time for sixty-five years. I took my first lesson in improved methods in bee-keeping from Moses Quinby, of St. Johnsville, N. Y. I had heard of him and of his improvements in hives, etc., so I left my home in Massachusetts, and came to Troy, N. Y., trying to find Mr. Quinby. I learned that he lived up in the Mohawk Valley. I took a boat on the canal, and, after some days, found the man I was looking for. I told him my business, and was at once made to feel at home, and I felt that I had found one of the most friendly, kind men I had ever seen. For two days the conversation was upon bees and hives; and the book he was then preparing for the printer, "The Mysteries of Bee-keeping Explained," I purchased, and as soon as it came from the press I became its owner, and was very much benefited by the visit and by the reading of the book.

Depauville, N. Y., Oct. 14. J. J. ALLEN.

[My good friend, the above brings vividly to my mind the time when I first got hold of father Quinby's first book. It was after I had read Langstroth, and had adopted movable-comb hives; but I was so much taken up with his plan of bee-keeping in box hives that I actually meditated starting a box-hive apiary; and I have oftentimes felt since then that it would be a very simple and easy thing to manage an apiary on Quinby's old plan. And he made money with his bees year after year, which is more than some of us have done in modern times, with all our modern appliances. Thank you, friend A., for your little sketch. That trip you made on the canal boat, occupying several days, could now be made in about as many hours, I presume.—A. I. R.]

THE V-SHAPED SLIT IN SECTIONS.

Have you room for a word from me regarding the V-slit section mentioned by Dr. Miller in a Stray Straw on page 610? This section, which has a longitudinal V slit in the sides and top-bar, and a groove on the inside of the bottom-bar, has become popular in England lately. The foundation is fitted after the section is folded, by just placing the section in a close-fitting block (which keeps it square), the slit being then opened wide, and the sheet of foundation—previously cut to the right size—dropped into it. The operation is completed by closing securely, at the top and sides, the slit in which the foundation is held, while at the bottom it is kept in its place by the groove on the inside. Thus these sections can be fitted absolutely full of foundation that can not break down or twist, with great rapidity, and without any special apparatus or skill. The point mentioned by Dr. Miller, that the slit, being V-shaped, does not show in the finished section, is a good one, but it may also be easily shown that the foundation is gripped better in a V slit with its sides converging toward the outside than in a plain saw-cut. Sections with a plain saw-cut down three sides have been known for a long time, and are mentioned and illustrated in Simmins' "Modern Bee-Farm," but I believe the V-shaped slit and groove in the bottom-bar are my own original ideas, brought forward three years ago, and sections embodying these improvements are known in England as "Sladen's sections." The Sladen sections were at first considered too frail for general use; but this objection has not been borne out by recent reports, and they have been found not more liable to breakage than ordinary sections. For a full account of these sections I refer you to the *British Bee Journal*, 1897, pp. 431 and 486; also 1898, p. 236.

I have not lost my interest in wild solitary bees, and should be glad to exchange specimens with any entomological readers of this journal. F. W. L. SLADEN.

Ripple Court, Dover, Eng., Sept. 1.

[In the absence of an illustration, perhaps it would be well to explain, in addition to what is said above, that the section is cut clear through the top and sides longitudinally with the grain, and the back of the square groove at the bottom, almost cut through, acts as a sort of hinge to hold the two halves together. The two parts of the section are spread apart at the top about as you would open a book, and the sheet of foundation is slipped in, dropped into the groove, when the two parts are pressed together, holding the foundation securely in place, very much as one would open up a book at about the middle, slip in a sheet of paper, and close the book up again.

I believe there can be no question that there are fewer pop-holes in the comb honey, and the same is better filled out, when there are full sheets used reaching clear out to the sides, top, and bottom; but in the case of the Sladen section the foundation is held securely in the V-shaped grooves in the top and two sides, and by the square groove at the bottom.—ED.]

REPORTS ENCOURAGING

The honey-flow in this part of Illinois was very good. I got from 75 to 100 lbs. per colony, comb honey. I have 24 colonies, and had only one swarm.

Clinton, Ill. P. H. PEPPERKORN.

A GOOD HONEY-FLOW IN UTAH.

You don't say any thing about Utah honey, nor about the honey crop. There never was a better crop raised anywhere than the one we have had this season. I took from one colony 430 lbs. of extracted; 250 from eight or ten young swarms. I did not raise any comb honey. My average crop from 96 colonies was about 165 lbs. to the colony.

Vernal, Utah. G. W. VANGUNDY.

AN UNUSUALLY GOOD YEAR.

I see from different accounts that there is a scarcity of honey in some parts of the States. Around here we have had an unusually good year. We had 38 hives to start with in the spring. We got 7000 lbs. of honey, of which 500 is comb honey.

Kingston, Ont. JNO. LANGDON.

A. F. T., Kan.—It is certainly evident, from what you write in your letter, that there are fertile workers, and several of them, in the hive you refer to. The larvæ simply die, and we doubt if it would lead to foul brood.

EDITORIAL BY E. R. ROOT

THE LEWIS CO.'S EXHIBIT AT OMAHA.

ELSEWHERE we show the G. B. Lewis Co.'s exhibit in the Omaha apicultural building. This exhibit was one of the largest (if not the largest) displays of any of the supply manufacturers. It is oblong, and faces the main aisle going through the building.

The G. B. Lewis Co. have the reputation of making a very nice line of goods. They are prompt, reliable, and enjoy a very large trade with bee-keepers, particularly in the West. They are the pioneers in the manufacture of the one-piece section with V grooves, and have put thousands of dollars into special automatic machinery for making this line of goods. We have found them to be honest and fair competitors—certainly pleasant people for us to deal with. We wish them prosperity and a big trade next season.

A NEW WAY OF FACING.

I HAVE just been looking over a lot of honey that recently came in. At first I thought it was comb honey in plain sections; but on closer inspection I noticed that the edges of the sections had been split or whittled, making a no-bee-way-faced section. Opening a case I saw that the bee-keeper had actually cut away the bee-ways, or, rather, the tops and edges, of the sections whose faces were next to the glass. This brought the comb up close, giving it the effect of honey in plain sections.

I do not go into the ethics of this sort of facing; but it is sufficient to note that the bee-keeper who put the honey up thought that honey in plain sections would show off better than in the bee-way kind, so he resorted to the method of facing above explained. It certainly does add to the appearance of the honey, to my notion.

THAT BULL-FIGHT, AGAIN.

I HEARD indirectly from Harry S. Howe, Coggshall's "lightning operator," that, while the bull episode, represented on page 764, in our previous issue, was a funny kind of lark, it really lacked but little of being a tragedy. Mr. Coggshall told me that he did not care to reproduce the scenes again for the amusement of his brother bee-keepers.

It seems there were two "bull-fights;" but the first time he went through the experience he says he was literally almost "scared to death," and for days afterward he scarcely recovered from his fright. When the bull came at him the first time out in the middle of the lot he realized that he was entirely alone, and a long way from any house. When that pair of gleaming eyes came nearer, and when that woolly head gave forth a mighty roar, he thought his end had come. But as he hitched along by degrees (for he said he knew it would never do to run) he spied his apiary, and then a gleam of hope came. He does not know exactly how he got near one of those hives; but he says when he got where he could give one of his "professional kicks" he knew the battle was his. He "pressed the button" and the bees "did the rest."

TOO BLACK AN EYE; DRAWN FOUNDATION.

MR. WEED, who has just looked over what I wrote regarding drawn foundation, in an editorial in another column, and which is now on the press, thinks I have given the article too black an eye. He calls my attention to the fact that L. Stachelhausen, in our July 15th number, says he experimented with the same foundation, and found that the bees entered it much sooner than they did the old-style—that a good deal depends upon *the time of year.* In the earlier part of the season the bees show a decided preference for the drawn article; but later this difference may be less marked, as is noted in the experiments of Coggshall and Niver elsewhere.

The drawn foundation that I referred to, and which was tested by Niver and Coggshall, had cell walls only ⅛ inch deep. If the walls had been ½ inch deep, or ¾, the results would have been very different. The bees would then have had plenty of surplus capital to work on; at any rate, last season and this, where *deep* walls (¼ inch or more) were used, the bees evinced a marked preference for the new article. Of course, there are certain objections to deep-cell; namely, the cost of transportation, on account of its great bulk, and also that other bugaboo, advanced by a few, that it looked too much like artificial comb, and therefore would give rise to the artificial-comb story.

WHERE GLEANINGS CIRCULATES.

IN going over our subscription-list, it occurs to us that our readers may be interested in knowing the extent of the circulation of GLEANINGS. Here at home we have readers in every State and Territory. Just over in the Queen's possessions, GLEANINGS visits many homes in six provinces from Nova Scotia to British Columbia. To the south it goes to Mexico and Central America; in South America, to four countries. Between these countries we have a large number of readers in the different islands of the West Indies. Crossing the Atlantic, in Europe alone GLEANINGS goes to nineteen different countries, and has a number of readers in South Africa. Via the trans-Pacific mails it is hurried to China, Japan, India, Siam, Australia, New Zealand, Tasmania, Hawaii, and other islands.

When our friends in Norway and Sweden are reading this their bees are likely in winter quarters, while those in South Africa, South America, and Australia are no doubt in the midst of their honey harvest.

EFFECT OF CUBAN HONEY ON THE HONEY-MARKETS OF THE UNITED STATES.

WHEN I visited Mr. Coggshall he expressed some fears that Cuban and Porto Rican honey could now, under the new order of things, be produced and shipped into the New York markets at a price so low that it would very materially affect the price of York State buckwheat. Even under the old order of things he had found that Cuban honey was somewhat of a competitor; but now he was sure it would be a serious one.

"What are you going to do about it?" I said.

"Can't do any thing, unless it is to run for buckwheat comb honey or go out of the business."

At the Omaha convention no one seemed to fear that the honey from our newly acquired possessions would make any serious trouble with the dark or amber honey of the United States; but the fact is, there was no one at that convention who was in position to know the facts.

I should be glad to receive communications from those of our correspondents who can give us any definite information. We expect to have a series of articles on Cuba and Porto Rico soon, from W. W. Somerford, illustrated by means of a camera. Perhaps these will give us some information along these lines.

HOW PLAIN SECTIONS COMPARE WITH THE OLD-STYLE IN THE MATTER OF GRADING.

I HAVE just received a note from Byron Walker, who, as I have explained, not only produces large crops of honey himself, but is a very large handler of honey produced by others. His sales every winter run up into the thousands of pounds. He probably knows as much about grading as any bee-keeper in the United States. Well, here is what he has to say regarding the grading of plain sections as compared with the old-style:

> I forgot to state to you, when you were asking me if I had handled any of the no-bee-way sections, that I found the honey stored in them entered into the fancy grade in much larger proportion than that stored in the old style sections. B. WALKER.
> Evart, Mich., Oct. 14.

A higher grading means a higer price, and this simply reiterates what I said last winter; namely, that it seemed to me that the plain sections *must* bring a higher price in competition in the open market with old-style sections with bee-ways. I knew that those who sold them last year, and, in fact, a good many years before that, were realizing higher prices, and I did not see any reason why others could not get them. Mr. Walker is not a man who would be prejudiced in favor of plain sections, and I should regard his judgment as entirely unbiased. This, together with the statement of the Columbus Commission & Storage Co., which I published a short time ago, to the effect that they could get a higher price for honey in plain sections, and wanted to get more of it, rather goes to show that I was not premature in suggesting that higher prices could be obtained for the new line of sections.

But I do not wish to be understood as saying that I believe higher prices can be universally obtained; but I think I am safe in saying they will hold their own, and many times realize higher prices.

SELLING HONEY.

A FEW days ago I made a pleasant call at the home of my cousin, Wilbur Fenn, of Tallmadge, O. When I get around to it I have something of a potato-story to tell, but just now I want to tell a story about selling honey. Cousin Wilbur took a little pains to inquire of his neighbors, and got orders for six gallons of honey, and then sent in his order. Now, six gallons makes an odd package; but ten one-gallon cans make a complete package. Our people sent him *ten* gallons, and I fear they did so without making any explanations, and without his permission. When cousin Wilbur arrived at the depot, and found ten gallons, he was a little afraid he would not be able to get rid of it all without some trouble. Accordingly he asked the agent at the depot if he did not want some nice honey; but the agent did not think he did; but after Mr. Fenn whittled a clean piece from a pine stick, dipped it into the honey, and gave the agent a taste, he took a gallon right off. Then he went to a prominent grocer in Akron with the same result. The grocer did not want any at all until he tasted it on the pine stick, and then he wanted a gallon. On the way home he tried the same experiment with some people he chanced to meet, whom he knew, and I think he made a sale every time. After he *got started* in selling honey, it was an easy matter to keep right on. As a result he almost had to quarrel with a neighbor so that he could reserve one gallon for home use.

A few days ago I saw Mr. Herman F. Moore, the honey-man of Chicago. He had a lot of thin clean slips of wood—I think they call them cigar-lighters. He goes from house to house with a clean tin pail of honey. One of the slips is dipped into the honey, and given to the people to taste. He sells the honey only by the pailful, and takes great pains to have it exactly like the sample he is showing. A sort of city express delivers the honey to the houses, collects the money, and brings it back for a very small sum, so friend Moore has nothing to do but to give his customers a lick and take orders. Cousin Wilbur struck on the same "racket," you see, and that is the reason why he did not have honey enough to go around. Perhaps I should add that the ten gallons of honey was water-white California mountain sage; but he says the light amber takes about as well, and with some people better than the water-white.—A. I. R.

THE FATE OF DRAWN FOUNDATION; LEVELING DOWN SECTIONS; DOES IT PAY?

ABOUT ten days ago I made a trip east to learn more about plain sections and fences. For that matter, I made another one west, with the result that I collected a fund of information which I will give with illustrations a little later. Suffice it to say for the present, that the only way to get reliable information, it seems to me, is to go where the honey is produced in plain sections; inspect the honey in the cases just as it comes from the hive, and after it is prepared for market.

On this trip I called upon Mr. S. A. Niver, brother-in-law of the late Miles Morton, at Groton, N. Y. I spent a day and a half in looking over plain sections and fences again. There were a number of things we talked over, but it seems there were some little matters that we did not discuss as we intended to; the following letter, therefore, will explain itself :

> *Dear Friend:*—After all, we forgot to sample that bitter honey, and also forgot to look for the difference between honey finished from drawn combs and foundation. Fully a third of the honey you saw was built on old combs, and not leveled at all. I put in some time, two years ago, leveling Morton's "piece boxes," about 800 of them. *My* lot at the North Star Apiary had to go without it — no time. At the close of the season you couldn't discover any difference, so we voted it labor lost, and you couldn't tell which was which on this year's honey.
>
> I have been getting out the wax from my cappings to day, and found 60 lbs. of honey candied solid in the bottom. What would you do? Well, here's what I did. (The honey was full of cappings, of course.) I rigged up a double boiler, and ran a steam jet into the outer one, which had water in it, and boiled the whole mass until the wax melted, and have left it to cool. How will it come out in the morning? and will that honey lose a little buckwheat (rich old buckwheat) flavor? You guess, and I'll report. S. A. NIVER.
>
> Groton, N. Y., Oct. 19.

I will explain that we sent to Mr. Morton, then living, and to Mr. W. L. Coggshall, half a pound each of the new drawn foundation with natural bases, wishing them to test it in the buckwheat honey-flow. Without going into details, I would state that the results of these tests showed no particular advantage in the use of drawn foundation over the ordinary. Supers, both at Niver's and at Coggshall's, were shown me that had been on hives for four or five days, and in each case the ordinary foundation kept about an even pace with the drawn. I can account for this result only on the ground that common foundation has a great deal of surplus wax in the wall, and this the bees evidently consider as so much ready capital to work into cell walls. The other, the drawn, of course, had walls drawn out about ⅛ inch deep, but they were nearly as thin as natural ; and when the bees began work upon them there was no surplus material to draw, so that, in working drawn foundation, they have to utilize their own wax, which, taking time, offset the advantage in having cells partially completed.

These tests at the apiaries of Morton and Coggshall have been confirmed by reports from bee-keepers in other portions of the country; and notwithstanding the fact that we have put a large sum of money into dies for the manufacture of this product, we feel that the truth must come out, even if it does, apparently, as I think it does, put the article about which we entertained such high hopes on the shelf. Mr. Weed and ourselves went at it in good faith; but, as I stated in advance, if it did not prove to be a success, we would not try to push it on the market. We feel that we could overcome the difficulties of manufacture; but if the *bees* show no particular liking for it over common foundation, then that settles its fate. *Requiescat in pace.*

But in all this experimenting we have learned a good many valuable kinks, and these we hope to incorporate into the foundation of the future. Mr. Weed is at work on a new set of dies, for which we have even greater hopes than we had for the drawn foundation ; and with these dies we propose to make a sort of combination of common and drawn foundation that will eliminate the objections to both, and be very much superior to either.

Referring to the drawn comb leveled down and not leveled, Mr. Niver said nothing about that whatever. I had always supposed that the leveling down *a la* Taylor did away with thickened and soiled edges on the top of the cells, and that the bees, therefore, were compelled to make clean new edges or practically clean new comb. I should like to get the testimony of others on this point. For pity's sake, let us do no work that is unnecessary.

With regard to the wax in the honey, my opinion is that Mr. Niver took just the right course in separating the two. If the honey had been white clover it would be darkened somewhat by the process, and the flavor would be a little impaired thereby; but inasmuch as it was only buckwheat, there would be no impairment, either in the way of color or flavor—at least, not enough to be noticeable. Now that I have put in my guess, we await your report.

FENCE SEPARATORS; VENTILATION; TAYLOR'S CRITICISMS.

IN the last *Review* Mr. Taylor, referring to the article by J. A. Golden, pages 689, 690, especially to the illustration, says:

> I am not going to call in question the claim that the kind of separator makes a difference in the color of the cappings of comb honey. That may or may not be a fact. What I wish to protest against is the sort of evidence used in the effort to establish the fact.

I do not find anywhere that Mr. Golden set up the claim that the fence was the cause of the whiter honey in 1 and 2, as against the dark honey produced in old-style sections and separators shown in 3. On the other hand he says, "I have my own idea as to the cause of so much difference in color, but I want to read the opinions of our learned apiarists — yes, and a footnote also, Mr. Editor; then I will be honest in writing my opinion as to the reason above referred to." Mr. Taylor will observe that Mr. Golden reserved his opinion. Then if he had quoted the whole of the statement in my footnote, instead of a part of it, he would not have made it appear that I too was setting up the claim that the fence was the cause of the whiter honey shown in engraving. Referring to the color of the three tiers of sections, I did say this : "I should imagine the difference would be so slight as to be almost inappreciable to the eye."

This is not the first time that Mr. Taylor's prejudice makes him fall into the error — just the one he condemns in Doolittle on the next page — of misquoting his opponent in discussion; or, perhaps, more correctly, making him say more than he actually does by quoting him in part and making that part stand for the whole; or, to put it another way, set up a man of straw, and deliberately knock it over— a very common and easy trick on the part of men of less mental caliber than Mr. Taylor.

As to my opinion that the fence gives freer ventilation, and, consequently, better ripening of the honey, Mr. Taylor asks, "Would an empty wicker chair standing in a room give better ventilation?" I am surprised that he should use an illustration so crude, "the pertinency of which," to adopt his language, "in my view I am unable to discover." The old-style section-super consists of a number of compartments nearly shut off. The new style has the same number of compartments, but with the sides (separators) perforated with horizontal openings affording air-spaces or passageways from one compartment to the other. When we pile lumber in a dry-kiln we pile it so that the hot air can pass between and around the boards; that is, we leave air-spaces between the boards. The freer the communication between the boards the quicker and better the lumber dries. A section-super is a sort of dry-kiln. The fanners keep up a circulation during the ripening process. Obstruct their air-currents and you defeat, to a limited extent, the rapidity of the work. This is not all theory, because we have reports already, right from the field, to this effect. For example, the following, from W. C. Gathright, is a case in point:

> This season about half of my apiary was supplied with fences and plain sections; the other was run with the old-style sections and separators. Supers with the old-style sections were put on first, part of them being filled with empty comb yet I got considerably more of the plain sections finished than of the old-style. There is no doubt about bees working faster in plain sections with cleated separators. They enter them and begin work almost as readily as they would in extracting-supers. This is the second year I have used them, as I tried a small number last year, and the result is that I shall not use any more old style sections. My separators are made of three slats, and are 3⅝ inches wide, having openings 3/16 inch between the slats; and the top of the separator is ¼ inch below the top of the sections. I consider the passage over the top of the separator of more value than those in the center. They finish up the honey, and seal the top row of cells next to the wood better than they do with separators that come to the top of the sections; then in tiering up it gives a larger opening and a freer passage from one super to the other.
>
> I do not believe there is any danger of bulging over the separators, for I have never seen a single one that was bulged. W. C. GATHRIGHT.
>
> Dona Ana, N. M., Sept. 26.

Again, Mr. Taylor, referring to the same illustration, says:

> The most remarkable thing in the photograph is that the sections all appear to be rather scantily filled. From the claims heretofore made for plain sections and fences I have been looking to find the sections filled nearly solid.

A good deal hinges on what he means by "rather scantily filled." If I am any judge (and we buy thousands of pounds of comb honey every season), the sections under consideration are fairly well filled, and those in 1 and 2 are equal to nine-tenths of the ordinary No. 1 honey in the open market.

As to the last sentence above quoted, there may be partial ground for his expectations. After all, I can scarcely escape the conclusion that, even then, our friend has, in accordance with his usual failing, read more into (or out of) what he has read on the subject of plain sections and fences than the subject-matter would really warrant. Any advocate of plain sections who would go so far as to broadly claim that they would be "filled nearly solid" would be laying himself open to ridicule. Perhaps the illustration of the Aspinwall honey was misleading. If so, it made its first appearance in the *Review*, and its editor said as complimentary things about plain sections as have been said by any one.

It will now be in order for Mr. Taylor to "protest against" the "sort of evidence used in the effort to establish" the superiority of plain sections If if were fair to use the illustration that appeared in the January *Review*, I can't see that the reproduced photograph in GLEANINGS, on p. 690, was out of place when neither Mr. Golden nor myself claimed that the fence was responsible for the difference.

QUEENS LAYING IN THE SPRING.

Referring to the statement by Dr. Miller, to the effect that he never knew any exception to the rule that, left to nature, a queen enlarges her brood-nest in the spring by laying eggs outside the cells already laid, Mr. Taylor asks me to explain what I meant when I said I thought there was an exception to even this rule. In rare instances a young queen may lay eggs very scatteringly; that is, eggs in cells here and there. I know of one or two instances where those scattering eggs were in separate combs. As I remember it, the queens were late fall-reared, and, being probably fertilized in the fall, did not lay till the following spring, and then in the manner stated. After a week or so these queens began to lay as they should. It is quite a common thing for imported Italian queens, immediately after being released from the introducing-cage in the summer, to behave thus; but it is not common for any queen in the spring. Mr. Taylor should not forget that I was talking about "freaky things," not regular queens.

JOURNALISTIC COURTESY.

I am sorry to see that Mr. Taylor mars some of his criticisms by what I may call the lack of journalistic courtesy. For instance, in speaking of Doolittle this is what he says: "His statement, backed by the strength of his name, furnishes what the editor of GLEANINGS would call 'heavy testimony.'" I care not for myself; but the sarcastic reference to Doolittle's name is uncalled for. It adds absolutely nothing to Taylor's argument, and should have been, in my judgment, like other similar flings, stricken out by the editorial pencil before it saw the printer. That I am not alone in deploring such things in Mr. Taylor's writings will be evidenced by the following extract from the *Review* by a writer who, though believing that criticism is needed, says:

> When I saw the first installment of Mr. Taylor's criticisms I experienced a feeling of antagonism, although I had not yet read it, on account of his *previous* utterances. It may be that others have felt the same. To an inquiry in the *American Bee Journal*, asked in good faith, he replied, "Poppycock" When E. R. Root misunderstood one of his experiments he alluded to "the gray matter of the brain" When Mr. F. Rauchfuss criticised another, he remarked that he was "writing for bee-keepers who think." I consider these remarks uncalled for and ungentlemanly.

I do not refer to these with any desire to strike back; but if those criticisms could be shorn of that "disagreeableness" that Dr. Miller tells about, they would do vastly more good. Mr. Taylor's work is too good to be marred thus.

NOTES OF TRAVEL

BY A. I. ROOT.

YELLOWSTONE PARK, CONTINUED.

I have before remarked that, on reaching each new camp, I was very particular to find out about the drinking-water; and at almost every stopping-place I made friends with the cook, and got permission to help myself from the tea-kettle whenever I wanted a drink. At Upper Geyser Basin, however, I found in my tent, when I came to retire, a good fire in a box stove, and a tin pail of very clean-looking water on my wash-stand. I tried some of the water to see if it would make good soapsuds, making sure it was soft; and, having been told they got all their water for drinking and cooking at a soft-water spring up in the woods, I naturally concluded this must be that same pure spring water. So I warmed some on the stove, and had a good drink just before going to bed. I felt somewhat distressed during the night, but was up by daylight, made a fire in my stove, and took another drink of hot water. Then I looked out of the door of my tent and saw our host carrying two brimming pailfuls of water, steaming hot, from a geyser near by. Yankee-like I was inquisitive, and he informed me that it was cheaper to bring hot water from the boiling springs than to heat it on the stoves. Besides, the *spring* water had to be hauled quite a piece with a team. He filled the pails with hot water all around the tents just before the guests arose. Said I:

"But will this geyser water wash nicely with soap?"

"Oh, yes! it washes beautifully. Didn't you try it this morning in your tent?"

Just then it occurred to me that I had taken two big drinks of *geyser* water, thinking it was soft water from the springs. But I ventured one more question.

"You say it is nice water to wash with; then why is it not good to drink?"

"Oh! it won't do to drink at all. I suppose it would kill anybody to take a good big drink of it, as it contains so many minerals."

I did not ask any more questions. In fact, I went off and sat down by myself, and thought I would wait and see whether I was going to die or not. Well, I did not die — at least not at that time; but I was rather uncomfortable all the forenoon.

When somebody mentioned that there was a rustic bath-house away down in the piny woods by a hot spring, I concluded I would take a bath. The path was a winding one through clumps of bushes and beautiful wild flowers scattered all along the way—a veritable sylvan retreat, in fact. When I reached the spot I found the curtain up in front. A wooden bath-tub occupied one end of the tent. Two streams of water flowed into this bath-tub — cold water from a wooden trough, and hot spring water from an iron spout. Either spout could be shifted so as to pour off at the outside or on the inside of the bath-tub; and thus one could have just the temperature desired. You could cover yourself all over with lather from the soapsuds, and then you could rinse off the soap, not only once, but twice or thrice, for there was "oceans" of water, almost, running away constantly. But, didn't I enjoy that hot-spring bath? If you pull the curtains down and tie them up tight, the temperature inside of the tent soon rises not only up into the 90's, but far above that. It was like that greenhouse I told you about in our last issue. I rather think I had the advantage of the rest of the party, for I had an *inward* cleansing with geyser water, as well as an outward one.

The trip from Upper Geyser Basin to Yellowstone Lake, the greater part of the way, was one of the finest in the park. I regretted a good many times that I did not stick to my wheel so I could take in the beautiful scenery a little more leisurely. One of the most beautiful scenes on the route is Kepler Cascades. Here is a fall of something like 150 feet; but the water, instead of dropping straight down, passes over a series of shelves, making little falls. With the beautiful forest surrounding, the wild flowers, and the birds, it is one of the prettiest bits of scenery I think I ever found. About half way to the lake, on some elevated ground, there is a view of the Teton Mountains, fully fifty miles away. There are three snow-capped peaks called the Sentinels. These form part of the boundary between the States of Wyoming and Idaho, and they rise to the tremendous height of 14,000 feet. A beautiful view of Yellowstone Lake can be had from the roadway, some little distance before it is reached. Yellowstone Lake is away up in the mountains, and it is no trifle of a lake either, for it is something like 15 miles wide and 20 miles long. It is the largest body of water in North America, at so great an altitude—almost 8000 feet. We do not know how many hot springs and geysers there are in the lake, under water; but we do know that there are multitudes of them all round about the lake. A beautiful steamer, built somewhere in the East, has been, at much expense and immense labor, transported to the waters of this lake. Tourists can take a boat-ride across the lake, or they can go with the driver in the coach around the shores.

On an island well out in the middle of the lake, called Dot Island, is a sort of park, or zoological ground, where may be seen running wild a few buffalo, some elk, and some mountain sheep. The captain of the steamer has charge of them, and does the feeding for the entertainment of the visitors while the steamer makes a little stop. There are quite a number of islands on the surface of the lake. With all the hot springs in and around the lake, it is not astonishing that quite a river constantly flows out from it. I have told you about the fish already, in my bear-story to the Sunday-school class.

At the camp near the lake we went out in the morning and found wild strawberries; and by following the little mountain brook that supplies the camp with pure soft water we finally discovered a beautiful little spring away up among the hills — the source of the little stream.

While taking dinner we heard numerous reports from travelers and others, to the effect that Mud Volcano was on a "rampage;" in fact, it was belching forth to such an extent, and shaking all the earth around, that it was said travelers almost hesitated to venture by on the road. About 2 o'clock we reached the spot. Quite a crowd for that remote region was gathered about the puffing monster. In the side of a hill near the roadway there was a great pit, perhaps fifty or sixty feet deep. The pit was so much filled with steam, however, that it was only occasionally one could look down into its awful depths. Every now and then the steam seemed to gather force to throw out great blocks of mud that seemed constantly settling back again into the crater. Sometimes the mud seemed to have the upper hand, and the crater was closed or choked up; but by and by, with a great upheaval, out would come chunks of mud, some of them about the size of a common cook-stove, which would be belched forth away up into the tree-tops. Then the spectators would have to dodge, for these chunks of mud were boiling hot, and would have scalded as well as soiled. There was a pathway up along one side of the pit; but to get on the other side, where the wind blew the steam away, we had to cross the highest point of the crater. A good many, in their hurry to see the sight, would take a short cut near the brink, and it occurred to me it would be nothing at all strange if that soft earth where people were constantly tramping should cave in and slide down into that awful crater. There was something wonderfully fascinating about the operations down in the boiling pit. At every explosion the ground would shake so as to make the trees fairly quiver where we were standing. I got hold of a little shrub, and was peering over into the abyss. While I looked, a portion of the side-hill on the lower side started to move and slide down into the crater. Finally, down it went, and the breathing orifice of the monster was shut up with mud. Then the steam slowly gathered strength and volume, and then out the mud came with a terrific explosion, only to slide back after a while and repeat the program. I heard the women scream to us to come away; and just after the last explosion I looked up and caught sight of the face of my good friend Mrs. Penwell. She was as white as a corpse, and the look of agony and distress on her face startled me more than did the boom of the volcano. I came away at once, and said, "My dear friend, for *your* sake I will come away, although I do not think there can be any great danger where your husband and I were standing."

The lady was right; for, while Mr. P. and myself could probably take care of ourselves, we were setting a bad example to others ; and I should not be at all surprised to hear that some person, or perhaps a crowd of people, have gone down into the boiling mud in their eagerness to see a little more of the fascinating scenes going on down in that terrible crater.

Our trip during the remainder of the afternoon was mostly along the beautiful Yellowstone River. We saw tourists fishing every now and then; and almost every angler seemed to be rewarded with great trout, as large as he could well pull ashore, and some of them larger, in fact, than the fisher's children could readily carry along.

Quite a little before night we reached the camp close by the falls, and almost on the very brink of the Grand Canyon of the Yellowstone Park. I did not enjoy the sight of the falls nor of the canyon as much as I might have done otherwise, for two reasons. First, I was not well enough to clamber up the dizzy heights. Secondly, I lacked the inspiration and enthusiasm that always go with me when riding my wheel every day. Now, I do not know how it is with other people, but with myself my physical make-up (or that other fellow who goes along with me that I have talked about) absolutely refused to recognize the awful depths that stretched before us as we looked down. You understand, I take it, the sense in which I use the word *we*. I climbed down to the brink of the upper falls, and looked over. The guide says the water falls 140 feet; but this fellow I have told you about insisted that it was not more than 40 feet, without the hundred. When I tried to pitch a stone over, however, it seemingly refused to drop straight down, but kept drawing back toward my feet or under them. I saw the foaming and seething water below, but there did not seem to be anywhere near the quantity that there was in the river as it dashed over the cliff. The Great Falls lower down is 360 feet — perhaps a little more than twice the height of Niagara; but when one looks down to the bottom of the canyon the distance does not seem to be at all astonishing. Of course, the things down there have a very strange look, and the water at the bottom of the falls seems to run off into the surface of the rock. At Inspiration Point, three miles below, this thing I have mentioned seems to be a little more emphatic. The eye, the judgment, and the imagination refuse to accept the awful truth. All of our senses are unaccustomed to any such tremendous depths and distances. You may throw a stone as far as you can, at Inspiration Point, but it disappears somewhere, and you never hear it strike. In fact, you can not even hear the roar of the cataract. There is a place where tourists can go down by the aid of a guide, with a rope, to the foot of the falls, and the stoutest of our party took this trip while we went up to Inspiration Point. While we were standing there, and trying to take in the distance, one of the ladies suggested that we might see the men-folks down at the bottom of the falls. By looking intently we did see some little specks like ants moving about. One of the party suggested that it was the men in their shirtsleeves. Then we saw the rope attached to a pine-tree where they let them down the side of the cliff. When we finally realized that these microscopic beings were the men of our party, *then* we began to have some conception of the enormous distance. Fix your mind on some object about a third of a mile from where you are looking, and then try to realize that Grand Canyon is just so deep *straight down*. For instance, the river below looked to us, where we stood, as if one might jump across it. On our return one of our men said that a pretty good man could just throw a stone across the stream. What looked to us to be but little more than a brooklet was a raging torrent or river as far across as one can well throw a stone. Numerous hot springs were sending their waters out along the side of the cliff to join the mighty torrent.

I have not used any views of the falls nor of the Grand Canyon, for no camera can do justice to such things. The instrument, like the human eye, fails to grasp or tell of the awful distances. The river at the bottom of the canyon seems to come out of the side of the mountain. It runs a little distance, and then apparently runs into the solid rock again. The guide tells you there is a passageway through the rocks, but your stubborn senses say there is no such thing — that there is a solid, smooth rock, without any canyon or opening for the river at all.

The number of hot springs that empty into Yellowstone River along through Grand Canyon actually raise the temperature fully twenty degrees. We greatly regretted that none of our party had a field-glass nor even an opera-glass to help us take in the wonderful view spread out before us. The colors on the rocky cliffs all along the Grand Canyon, especially those seen from Inspiration Point, are, when illuminated by the sun at the proper angle, simply gorgeous. A beautiful display of autumn tints from a forest of maples gives one as near an idea of it as any thing I know of.

Lack of health and strength prevented me from making explorations that I otherwise would have made. On the point of one of the inaccessible crags we saw an eagle with her young near the nest. The eaglets were nearly old enough to fly, and we could imagine the mother pushing them off, and then bearing them up as we read about when they are unable to make the point desired.

OUR HOMES,

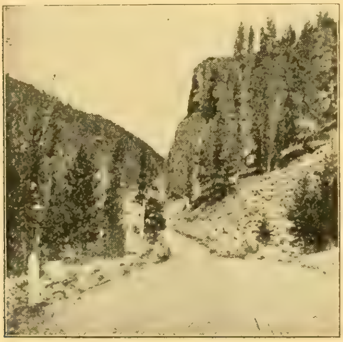
BY A. I. ROOT.

God is our refuge and strength, a very present help in trouble.—PSALM 46 : 1.

I have just been telling you that I did not enjoy my trip at the great center of Yellowstone Park, the Grand Canyon, as I should have done had I been in better health. So far during my visit in the park, my wheel, on which I had depended so much, had given me but little pleasure or satisfaction. During the forenoon Satan had been whispering that I was getting to be too old to enjoy scenery or travels, and, in fact, that my usefulness for *any* thing was pretty much over. He whispered that the wonderful revelation of latter years, the "second wind," was all right for younger people, but that, after a man was toward sixty, he was pretty well past such things ; and I do not know but I got into the rut that I was not going to live very long, and that I should probably be miserable the rest of the time I did live. Dear reader, does Satan ever tempt you in that way? I felt a good deal discouraged that forenoon. Right where I should have been finding so much enjoyment in studying God's wonderful works I was not happy. Then Satan kept on. He said this world did not amount to very much, any way ; that I had seen pretty much all of it, and had wasted lots of money in doing so. He suggested that I was losing my power and influence as a writer, and that I might about as well give up the Home Papers, for I should have to pretty soon anyway. Do some of you inquire where that little prayer of mine had gone to that it should be entirely out of sight at such a time? Well, it did finally begin to assert itself ; and, even if I was too weak and indolent to utter a prayer, I heard its familiar ring, "Lord, help."

The easy coach was just coming up to the beautiful Wylie camp. I sprang out, and went straight to my little tent. I tied the curtains up close, although it was a beautiful warm day, and knelt on the carpeted ground beside my little bed, and prayed. The thought embodied in our little text was uppermost in my mind. I do not know just why, but that word "strength" took a wonderful hold of me. We were right in the neighborhood of Mt. Washington ; but I had to give up climbing it, because I did not believe I could stand the trip. I had tried climbing some down in the Grand Canyon and up the cliff, but both strength and enthusiasm seemed lacking. I closed my little prayer with an earnest appeal for physical strength. Perhaps my words were something like these : "O Lord, if it be consistent with thy will, give me *physical strength*. Forgive my want of faith, and rebuke the tempting spirit that has been round about me, by giving me physical strength that I may honor thee during the rest of my life, and serve my fellow-men."

Now, I did not at once feel any stronger after that little season of prayer all by myself, but I felt a degree of peace I had not enjoyed before during the day. I felt that I could trust my heavenly Father. I made a strong resolution not to borrow trouble, nor to worry about the future. Early in the afternoon our coach would reach Norris Basin, where I had left my wheel. I asked the driver if I might try the wheel for a mile or two, and see if I was strong enough to ride it, and then have him pick me up if I couldn't. He suggested that, if I was in doubt in regard to the matter, I had better ride all the way in the coach, for it would be considerable trouble to tie the wheel on, and they could do it better at the stopping-place than anywhere else. There was a temptation to choose the easy way of riding in the coach, that would not require any exertion. Then I thought of my prayer for strength. I told the driver I thought I could ride the wheel so as to get into camp before dark, anyway. I sprang from the coach, found my wheel all right, and as I got hold of my faithful old friend my spirits and enthusiasm began to revive. Just ahead of us was quite a hill, and it was sandy and dusty besides. I supposed, of course, that I should have to walk up that hill; but as soon as I was mounted, the wheel actually seemed as if the inanimate thing was tired of standing still, and wanted to go. I reached the foot of the hill, and then had one of my "happy surprises" as I rode up without a bit of trouble. I was soon out of sight of the stage, and in a very little time a strong healthy second wind took possession of my whole being. I laughed outright, and sang hymns of praise as I climbed every hill along that beautiful road. I kept thinking of the words of scripture, describing the horse: "He paweth in the valley, and rejoiceth in his strength." I came up to Obsidian Cliff just as the sun was in the right position to make it sparkle. See page 738 of our issue for Oct 1.



OBSIDIAN CLIFF.

Down in a corner at the left hand you will see one of the white mile-posts that the government has placed all along the roadway. This mile-post tells all the distances, and also records the altitude. Near the roadway, in the middle of the cut, is one of the telegraph-poles supporting the wire put up by the transportation company. No wonder the road is as good as it looks to be in the picture—a beautiful smooth path—for it is made mostly of pounded glass. You will notice some pine-trees on the top, growing right out of this flinty rock, apparently, and it is indeed wonderful to see trees wedging their roots into crevices, and growing thriftily where there does not seem to be any thing for them to live on.

A little before sundown I wheeled into Willow Park. In fact, I ran right up before one of the young ladies just as she had opened her mouth to announce that supper was ready. After the exercise that I had had, this announcement was of itself refreshing. Not only did the young lady look good and beautiful, but I seemed to have fallen in love with all the people and the surroundings. My appetite had come back, and I was well and strong. Oh what a *boon* is physical strength, and a consciousness that we are possessors of muscular *power!* When under the influence of second wind it is always a delight to me to climb hills, but I think I never enjoyed climbing hills more than I did that afternoon; and I did not forget to give thanks that my prayer had been answered. Oh how differently I felt! and how ashamed I was of the ungrateful and silly thoughts of the former part of that day! Some of you may ask, "Why, Bro. Root, why didn't you think to pray for strength before giving up your wheel and riding in the coach?"

Well, to tell the truth I either did not think of my little prayer or else I asked God for help with such a lack of faith that no wonder strength was not given me. I have felt many times since that I might have ridden my wheel clear through the park, despite the great altitude and mountains to climb; and, Providence permitting, I am going to try some time again going *clear through* Yellowstone Park on my *wheel.*

From what you know of me, and from what I have written here in these Home Papers, you may be surprised to hear me admit that I ever forget that God *is* our refuge and strength, and a very present help in trouble. I *am* ashamed of myself when I think of it. But I presume I am human. How often I think of that old favorite hymn of my father's—

Prone to wander; Lord, I feel it—
Prone to leave the God I love.

During the evening I felt so well and strong that I overhauled my wheel, looked into the oiling, adjustments, and put every thing in perfect trim. Next morning, before our party was up, I was off again, seeing and enjoying many sights that I did not notice on my former trip when I was feeling poorly. I reached Mammoth Hot Springs in excellent time, and went over once more the wonderful terraces. In crossing the bridge at Golden Gate I received my first admonition from the government soldiers. It was very kind and gentlemanly. One of them said: "Look here, my friend. Either walk, or ride very slowly when you are going down these roads cut in the side of the mountain. You might frighten horses, and have people thrown over the cliff."

I thanked him, and really enjoyed obeying to the very letter his sensible suggestions. If you look at Golden Gate on page 700 of our issue for Sept. 15 you will realize the justice of his admonition to wheelmen. In brief, I went clear down the mountain, and when I reached Gardiner I had ample time for a very pleasant visit at the residence of J. G. McKay. Some of the ladies there informed me that I ought to visit the Montana Experiment Station at Bozeman before going back to Ohio. She said it was 25 miles over the beautiful mountain pass, or "divide," as it is called, and that *some* of the *boys* had made the whole trip on the wheel, but she thought it was pretty difficult, especially climbing up for the first ten miles. I shall describe this trip later on; but

I want to say right here that I rode up the mountain pass, without a bit of trouble The newly found strength was *more* than equal to the demands. I caught up with and ran past a loaded freight-train ; but it was, of course, going very slowly on the ten miles of up grade. When it dodged through a tunnel while I was obliged to go over the top of the hill, of course the train got past me. Sometimes I have thought I enjoyed that trip of 50 miles, from Livingston to Bozeman and back, fully as much as if not more than I had the trip through Yellowstone Park ; but it was largely because I was full of health, strength, vigor, and enthusiasm.

I have written this with a prayer, and with faith that it will give energy and enthusiasm to many of our readers—faith to *read* and *believe* God's holy word, and especially to remember that he *is* our refuge and strength, and, indeed, a very present help in all sorts of trouble while we are striving to do his will.

Half way down the incline toward Bozeman I stopped for refreshment at a pretty little town called Chestnut. I wanted some beefsteak ; but the lady who kept the restaurant told me they had no meat-market nowadays, and that they could get fresh meat only when the meat-man happened to come around. A little further on I saw a meat-market, but a board was nailed across the doorway. Next door to it, however, was a good-sized saloon running full blast, and there were several other saloons in the town. The meat-market failed, and was closed up, but the saloon was booming, evidently on all sides. Now, nobody told me the history of that closed-up meat-market ; but you and I can guess why the people of that little mountain town, amid its beautiful surroundings and scenery, should fail to supply the traveler or the inhabitants with nourishing food while beer and whisky flowed in abundance.

As a fitting wind up to my little story of today I want to mention that our old friend Mrs. Jennie Culp — at least that used to be her name — told me, when I saw her at the Ohio State Fair selling honey, that she, like myself, had had troubles with indigestion and poor health, but that she too had gone to the dear Savior with her burdens and trials, and he had healed her of all her infirmities. I know that many of my good friends will say, "Why, Bro. Root, you are getting right over into the faith cure." Well, dear friends, the kind of faith cure that comes from recognizing the great Father above as your "refuge and strength" is all right ; and when you get to the point of faith where you accept and believe that he is a very present help in all troubles, then your feet are on the solid rock.

There are others among our readers who will say, "Why, Bro. Root, there is not any need of thinking your little prayer (which, of course, was all right) had any thing to do with your sudden accession of strength, appetite, etc. First, you had not become acclimated to the great altitude. Then you drank Apollinaris water, and topped it off with *geyser* water. By the time you reached your wheel you had been eating speckled mountain trout, as you have told us, and were getting over the effects of the mineral waters, and were becoming used to the high regions," etc. I suppose we could hunt up any number of good reasons to explain answers to prayer. Well, dear friends, I would by no means think of limiting God in his ways and means for bringing about an answer to our prayers. I prayed, and faith and strength came. An unthankful, lazy, and indolent spirit had possession of me. It was of more moment that this spirit should be banished than that I should have physical strength. You remember the blind man, when the Pharisees tried to make him think there was not any miracle in his case. They said that Jesus was a sinner. The blind man said, "Whether he be a sinner or no, I know not." But there was one thing he *did* know pretty thoroughly. He said, "One thing I know, that, whereas I was *blind*, now I *see*." I was sick, but now I am well and strong. When I ask God to heal me of physical ills, I expect to look about me and see what I can do to help answer my own prayer, or to fall in line, if you choose, with God's plans and designs ; and while I pray I shall avail myself of all the aid that any honest and capable physician can give.

TEMPERANCE MATTERS.

The following clipping has come to us, but we do not know in what journal it appeared :

PROHIBITORY REGULATIONS.

Some weeks ago we commented in these columns upon the edict of a prominent railroad company forbidding employees to frequent saloons, and making intoxication cause for summary dismissal. It seems that railroad companies are not alone in this indirect denunciation of the nefarious liquor-traffic. Other concerns recognize the fact that indulgence in drink, and the frequenting of saloons, destroy that in their employees which makes their services desirable and valuable. A man who drinks is not worth as much as the man who does not. Business men recognize that important point, and they do not propose to see themselves robbed, and consent to the destruction of their own commercial interests. The following circular, sent out by a prominent express company, shows the drift of things somewhat:

PERSONAL CONDUCT OF EMPLOYEES.

1. The following circular which has been issued by the officials of the Western department meets with our full approval, and is to be understood as applying generally in the company's business hereafter:

To SUPERINTENDENTS, ROUTE AGENTS, AND EMPLOYEES WESTERN DEPARTMENT:

1. We have been making inquiries recently into causes leading up to defalcations, shortages, or dishonesty among our employees, which, we regret to say, have been very large in number during the past year. From the result of these inquiries we are led to make the broad statement that many of them, if not the majority, arose through negligence of superintendents, route agents, or general agents in failing to caution or reprimand the more useful in our service against practices of drinking, or frequenting saloons or other resorts where pernicious habits are formed It seems impossible that officials of the company should be so slack in looking into the habits of their employees; but the statement made above, placing the moral responsibility at their door, is borne out by the facts. Many of those who have embezzled or committed thefts would never have done so had a word of caution or reprimand been given at the proper time.

3. Hereafter we shall hold the superintendents, route agents, or general agents personally responsible for any loss occuring through failure to properly exercise their authority in the matter of controlling the habits of drinking or gambling of the men they employ.

4. Any employee seen taking a drink of liquor while on duty or during business hours should be cautioned once, and, on repeating the offense, be immediately discharged. If an employee is known to drink to excess while off duty, and repeatedly, he should be dismissed from the service It is expected that you will know positively whether any man under your supervision gambles; and a man once found so doing must not be retained in the service a single day.

5. These two things, drinking and gambling, are the beginning of nine-tenths of the defalcations or stealing of our employees, and, knowing this, you are morally responsible for

the wrong doing of a man you have failed to caution, and you are responsible to the company for any loss occurring because of failure to discharge him when you find your caution is not heeded.

There are two points of special significance in the above. First, a gambler is *always* a dangerous man. In fact, this express company declares that a man who gambles shall not be retained a *single day*. They regard gambling, in some respects at least, as worse than moderate drinking. Secondly, in view of the above, why do not our express companies refuse to *carry* liquors any longer? Very likely it would make a big hole in the amount of business they do. But if their men handle liquors constantly, and in great quantities, and furnish them to others, how can they expect them to be total abstainers?

SOCIAL-PURITY DEPARTMENT OF THE W. C. T. U.

Our readers may remember that, three or four years ago, we discussed here in these columns the possibility of suppressing the *Police Gazette* from our news-stands, barber-shops, etc., inasmuch as it had already been ruled out of the mails by the postal authorities. Dr. Miller, Dr. Mason, and several others, wrote to the authorities at Washington, but our efforts did not seem to avail very much—at least not to our knowledge. Finding a copy of this periodical recently in one of our barber-shops here in this place, I mentioned the matter to Mrs. Dora Webb when sending in my yearly contribution. I am sure our readers will be interested in her reply :

Dear Brother Root:—I thank you most sincerely for your financial encouragement just received.

I can not see how the law under consideration could be more explicit in drawing the lines against the *Police Gazette* and *Police News*. Personally I have had a little experience. In Steubenville two news-dealers were selling the *Police Gazette*. We, in a sisterly way, remonstrated with the woman dealer, informing her concerning the law: but she retorted that she had not been *officially* warned. So we proceeded to "officially" warn her. We got a man (we had not the courage to do it ourselves, at that time, early in my work) to buy copies of the *Police Gazette* at each place. Armed with this evidence we went to the prosecuting attorney (who did not enjoy enforcing moral laws) and asked him to compel the dealers to desist, or enforce the State law, telling him we did not care to prosecute if they would cease their doings. The attorney at once did his duty, and created quite a feeling of unrest, to say the least, with the dealers; for within 24 hours they informed him they had burned every copy in their possession, and promised to cease, *and they did cease.*

In another place where I lived, a young newsboy was bringing in the papers, and they were being kept at barber-shops. One day as I was passing the shop I saw a little boy about six years old (it was summer) sitting in the window, on the sill, looking at pictures. I stepped *purposely* to the child and talked with him, and at the same time took notice that the paper was the *Police Gazette*. The little child was the son of the prosecuting attorney, who sat in the chair, being barbered. A brief time afterward I went to the attorney's office and asked him if he knew how his little boy was entertained while he was being shaved. He had not even noticed. I informed him, called his attention to the law, and asked him to see that it was complied with, telling him I was willing to appear as witness in the case, if need be. This put a stop to the business there. This was in St. Clairsville. The newsboy stopped bringing them when informed what the consequences would be.

In Steubenville, after the dealers ceased, we learned that two papers came to two men for their own use. They were expressed to them, and we could not reach them. *The Police Gazette and News make criminals wherever they go.* They are outlawed I am glad you are taking hold of the work of clearing them out of Medina. *God bless you.* DORA LESLIE WEBB.

Cadiz, Ohio, Oct. 21.

Accompanying the above was a copy of excerpts of the laws of Ohio in regard to the promotion of social purity; and I presume a copy of these laws will be furnished to any one who applies to Mrs. Webb, either in this State or out of it. Just now we make an extract from section 7027, concerning obscene literature and pictures :

SEC. 7027. Every person who, within the State of Ohio, sells or lends or gives away, * * * * or who *sells, gives away*, or shows to any minor child any book, pamphlet, magazine newspaper, story-paper, or other paper *devoted to the publication, or principally made up of criminal news, police reports*, or accounts of criminal deeds, or pictures and stories of immoral deeds, lust, or crime, or *exhibits* upon any street or highway, or in any place *within the view*, or which may be within view of any minor child, any of the above-described books, papers, or pictures, shall, on conviction, be imprisoned not more than five years, or fined not less than fifty dollars nor more than two thousand dollars, with cost of prosecution for each offense, or both imprisoned and fined, at the discretion of the court.

Now, then, readers of GLEANINGS, shall we not look about us and see who it is that is transgressing this just and righteous law? Whenever we go into a barber-shop or to a news-stand, look out for the *Police Gazette ;* and if there is much manliness about us we can surely do as well as those good women did in Steubenville, Ohio. If I am correct the above law was passed in 1896—not very long after the readers of GLEANINGS sent in their petitions to Washington. Is it not probable that our united petitions had more effect than we thought or knew of?

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

At Mammoth Hot Springs I saw some high-pressure gardening on a small scale that equaled any thing I ever saw anywhere. It was near the large hotel. The ground was made exceedingly rich with old well-rotted manure—perhaps sheep manure. Every thing in that little garden was mammoth in proportions, and wonderful in luxuriance. Potatoes stood up with the tops between two and three feet high, and the foliage was so gigantic in proportion that at first I thought it could not be common potatoes, but some special strain. In that locality there seem to be no bugs, flea-beetles, nor any of the leaf-eating enemies of the potato. Every leaf was perfect, and a model of health. Cabbages, beets, cauliflower, and every thing else seemed to be doing equally well. Very likely the garden was irrigated with warm water from the hot springs close by.

GARDENING IN MEDINA DURING OCTOBER.

At present writing, Oct. 26, we are yet without frost—at least, the tomato-vines are bright and green, and tomatoes are ripening slowly every day in full view of the window right before me. The exceeding wetness has prevented digging our potatoes. In fact, a good many of them are still growing more or less. There have been several little frosts that nipped the leaves of the Hubbard squashes and sweet potatoes. The tomatoes, at least this year, seem to stand more than the above.

I have finally found an everbearing strawberry — at least, I have one plant that bears great nice luscious berries all along through the fall, just as I saw the same variety do during the winter in Arizona. It does not bear a great many, but there are some blossoms and berries on the plant almost all the time. I have not any plants to spare, for the simple reason that it, at least during this season, keeps bearing fruit instead of putting out runners. I have it on our very best ground, and we are going to give it excellent care, and will try to get runners from it next season. Of course, the White Alpines bear berries every day during the summer — at least, they bear a few. They are small but very soft. The Louis Gautier has gone through two seasons without producing a fall crop as the introducer claimed it would. We have given it different soil, and will try it one more season.

The unusual wetness for the past three months has given me a revival in *under*draining and *surface* draining as well. My potatoes this season have done so much better right near a dead furrow that I think I shall, next year, throw our underdrained land up into beds so as to have a dead furrow, say every 30 feet; then these dead furrows empty into similar dead furrows at each end of the lot, or wherever there is much of a low place in the ground. I believe I shall get better crops, both in quality and quantity, for having these *surface* drains. You may remember this is the way James Smith, of Green Bay, Wis., managed to get his wonderful crops in small areas.

CONVENTION NOTICES.

The Colorado State Bee-keepers' Association will hold its annual meeting some time in November—the exact date given later. Heretofore we have met the third Monday in January; but it was thought best to meet earlier, and so we changed our constitution.
Loveland, Col., Oct. 18. R. C. AIKIN.

The annual meeting of the Ontario Bee-keepers' Association will be held in the city of Guelph, on the 6th, 7th, and 8th of December, 1898. There is every prospect of there being a good meeting and a large attendance, owing to there being other attractions in Guelph on these dates; namely, the Guelph fat-stock show, which has a continental reputation; the Guelph poultry and pet-stock show; the Experimental Union. Many bee-keepers have an interest in all these associations. All bee-keepers are cordially invited.
Streetsville, Ont., Oct. 20. W. COUSE, Sec.

The Illinois State Bee-keepers' Association will hold its eighth annual session in the State house, on the 16th and 17th of November, 1898. The Odd-Fellows hold their annual meeting the same week, and we have with them railroad rates of one and one-third fare for the round trip, open rate (that is, without a certificate). As this will be an important meeting we hope for a large attendance. Committees will be appointed, and steps taken to ask our next legislature for a foul-brood law. JAS. A. STONE, Sec.,
Bradfordton, Ill.

1,000,000 Peach Trees
grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.
32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.
THE STORRS & HARRISON CO.,
Box 1, Painesville, Ohio.
In writing, mention GLEANINGS.

Low-down Broad-tire Farm Trucks
originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons, and milk-peddlers' wagons. Steel-wheel trucks, $18.
Farmers Handy Wagon Co., Saginaw, Mich.
In writing, mention Gleanings.

THE BOWEN CableStay
Machine $10
TO BUILD THE STRONGEST AND BEST WIRE FENCE.
16 to 24 Cents per Rod.
No farm rights, royalties or patent stays to buy. AGENTS WANTED. Write for circular.
The Bowen Cable Stay Fence Co.
NORWALK, OHIO, U. S. A.
In writing advertisers, mention GLEANINGS.

One Man with the
UNION COMBINATION SAW
Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Catalog free.* 1-24ei
Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.
In writing advertisers, mention GLEANINGS.

Dovetailed Hives,
Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.
J. M. JENKINS, Wetumpka, Ala.

QUEENS. **Warranted purely mated,** either golden or imported, by return mail. Untested, ¼ doz., $1.75; select tested, ¼ doz., $2.40; best breeders, $2.00. One **sample** queen to new customer, 55 cts. each. **E. A. Seeley, Bloomer, Ark.**
P. O. M. O. office, Lavaca, Ark.

GOOD WHEELS
MAKE A GOOD WAGON.
Unless a wagon has good wheels it is useless. THE ELECTRIC STEEL WHEELS are good wheels and they make a wagon last indefinitely. They are made high or low, any width of tire, to fit any skein. They can't get loose, rot or break down. They last always. Catalog free
Electric Wheel Co., Box 95, Quincy, Ills.

MAN OR WOMAN or even a little child can make an entire success of the poultry business when they use the
MASCOTTE
INCUBATORS and BROODERS
They are so simple and perfect that one cannot fail with them. They hatch every fertile egg. Sold under a positive guarantee FREE illustrated catalogue.
240 EGG SIZE.
Mascotte Incubator & Lumber Co., Box 18, Bedford, Ohio.
In writing, mention Gleanings.

HATCH CHICKENS
BY STEAM—with the simple, perfect, self-regulating
EXCELSIOR INCUBATOR
Thousands in successful operation. Lowest priced 1st-class hatcher made.
Circulars free. Send 6c. for Illus. Catalog.
GEO. H. STAHL,
114 to 122 S. 6th St., Quincy, Ill.

A Great Mistake
it would be to purchase an Incubator or Brooder without first getting a copy of our 148-page catalogue. It costs 6c. but is worth a dollar to you for the poultry information it contains, to say nothing of the pointers it gives you. Send for it at once.
DES MOINES INCUBATOR CO., Box 503, Des Moines, Ia.

Pekin Ducks, $1.00 Each.
We have the largest and finest flock of Pekins we have ever raised, and in order to reduce the number quickly we will for a short time sell in lots of five or more at $1.00 each. They are the genuine long-bodied Pekins, and will surely please. Order quick.
We are headquarters for
"Every Thing for the Poultry-yard."
Largest and cheapest stock of Poultry Supplies in the United States; patentee and manufacturer of New American Incubator and Brooder. Pure-bred poultry at living prices. Send for our catalogue. It's a pretty book of 80 pages, finely illustrated, full of information. You need it. It's free. Address
Geo. J. Nissly, Saline, Mich.
In writing advertisers, mention GLEANINGS.

"THEY CAN'T BE BEAT." At any rate they have never suffered defeat in all the numerous tests, trials and competitions with the many machines of the same class.
RELIABLE INCUBATORS AND BROODERS
stand for the highest value known to the incubator art. It takes a book of 228 pages to tell all about them and our large pure-bred poultry plant, poultry supplies, etc. Sent on receipt of 10c in stamps. RELIABLE INCUBATOR and BROODER Co. Box B 49 Quincy, Ill.

BIG MONEY IN EGGS
if you can only get enough of them at the lowest cost. GREEN CUT BONE solves the problem. It doubles the egg product. It makes hens lay in the dead of winter when eggs are worth money. It keeps the hen laying. It makes chicks grow fast and mature early, and makes early layers of the pullets.
MANN'S NEW BONE CUTTERS
prepare bone in the best way. Cut fast, run easy, last long. Mann's Clover Cutters, Granite Crystal Grit and Swinging Feed Trays are all necessary to highest success. Cash or installments. Illustrated catalogue sent Free.
F. W. MANN CO., Box 37, MILFORD, MASS.

Headquarters in the West for Bee-keepers' Supplies.
The Largest Business of the Kind in the West.
Thousands of hives, millions of sections, tons of foundation, and quantities of other stock sold the past season.
We sell the ROOT GOODS AT THEIR FACTORY PRICES, AT DES MOINES, IOWA.
1898 finds us in enlarged quarters with the largest stock and greatest variety of goods ever offered. All the latest improved up-to-date goods kept in stock.
ORDERS SHIPPED PROMPTLY. Estimates cheerfully given. Catalog free. Address
JOSEPH NYSEWANDER, Des Moines, Iowa.

BEE-SUPPLIES.
We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring best goods at the lowest prices, and prompt shipment.
Illustrated Catalog, 72 Pages, Free.
We also manufacture Tanks of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.
Address E. KRETCHMER, Red Oak, Iowa.
In writing advertisers, please mention Gleanings.

SPECIAL NOTICES BY BUSINESS MANAGER

We have now ready our foul-brood pamphlet, leaflet No. 2, ready for distribution. We are a little late in getting it out, it is true; but, better late than never. As there will be nothing near the demand for these leaflets that there has been for the honey-leaflets, the price will be correspondingly higher, as follows: 10, 5 cts.; 50, 15 cts.; 25 cts. per 100; 500, $1.10; 1000, $2.00, all postpaid.

A LARGE ENGINE AT A BARGAIN.

Our 13x21 Buckeye engine is for sale at a very low price considering its value. It is a left-hand tangeye bed, automatic cut-off, running at present 200 revolutions, but at normal speed 165 per minute. If any of our readers know of any one in need of such an engine we should be pleased to hear from them, and we will give further particulars.

TWO PAPERS FOR THE PRICE OF ONE.

We have just made arrangements whereby we can club the *Poultry-keeper*, a monthly, edited by P. H. Jacobs, and published at Parkesburg, Pa., a fifty-cent monthly, with GLEANINGS, both for one year, for the price of GLEANINGS alone. The conditions of this offer are that all arrearages, if any, shall be paid up; then by sending $1.00 we will give you GLEANINGS and the *Poultry-keeper* both for one year. If you wish to take advantage of this offer, do so at once, as it will be withdrawn soon.

GLASS FOR SHIPPING-CASES.

The price of glass continues to advance; and were it not for contracts we had placed some time ago, and a good stock bought before prices had gone so high, we could not maintain present prices for shipping-case glass and cases including glass. These prices will have to be advanced for next season, unless in the meantime there is a decided change in the glass situation. The tendency is for still higher prices rather than lower.

MAPLE SYRUP.

We have on hand a quantity of maple syrup in three grades which we offer at the following prices: A few gallons of extra fine No. 1 at $1 00 per gallon. About 20 gallons of good No. 2 which we offer at 80 cts., or in 10-gallon lots at 75; and about 40 gallons of fair or No. 3, slightly tainted, which we will sell at 50 cts. per gallon, or in 10 gallon lots at 45 cents. Samples mailed to those interested. If you do not want it for syrup, the cheaper grades will do nicely for maple candy.

IMPROVEMENTS IN OUR PLANT.

Besides the 20x20 Ideal engine, which we hope to be placing in position before the next issue goes to press, we are putting in an 80 K. W. generator for the transmission of power by electricity. This generator will drive three new motors besides the five smaller ones we are now running from our lighting generator. Our entire plant will then be operated by one large engine driving most of the wood-working machinery by direct belt transmission, and the more distant machines by electric motors operated by the large dynamos run by the same engine.

DEPARTMENT STORE.

We are closing out that part of our business known as the Department Store. This was run for several years as the Counter Store. More recently the name was changed to Department Store, and a separate catalog prepared for it. In years past this store has been a great convenience to many of our customers; but because of new conditions it seemed advisable to discontinue it. Mail order business in the great variety of household requirements has been developed in recent years to such an extent by the large department stores in the cities that we could not keep pace with the march of progress without increasing our facilities and enlarging our stock and assortment. The Department Store was only a side issue with us, our main business being the manufacture of bee-keepers' supplies of all kinds. With this business increasing so rapidly, and requiring our whole time and attention, we were compelled to neglect the Department Store, and, needing the room, we decided to close it out.

Another reason for this decision was the fact that our branch houses, run in our name, for the sale of bee-keepers' supplies exclusively, and which never carried any of the store stock, were being bothered more or less with orders for goods listed in the Department Store catalog. Having decided to close out our Department Store we are working off the stock in every way, and many things at considerable sacrifice. Of course, we are already sold out of a great many items as listed, but we still have a stock of others. There are a few articles which have been listed in the Department Store catalog that we expect to continue to handle, and which will be listed on extra pages in the Bee Supply catalog.

The Root Bros. Co., at Plymouth, Ohio, manufacturers of the "Repairing Outfits," are going into the department-store supplies more extensively, and now list in their catalog nearly every thing we had listed as well as many other things. Those who have been looking to us for these goods will do well to send to them for their late catalog. You will get a catalog under the name of The J. A. Root Co.; and, if you send them your order, you will get fair and square dealing; but remember there is no connection whatever between this company and The A. I. Root Co., even though the names are very much alike.

On another page we offer more special bargains from our present stock while it lasts, and we expect to offer other items later on.

POTATOES FOR SEED OR FOR TABLE USE; PRICES OF NEW CROP.

Contrary to my expectations, prices are ruling lower on most varieties than last year. I presume the beautiful fall weather has had much to do in making the crop better and larger than was expected. In fact, we are able to offer, for an immediate order, very nice potatoes, either for seed or for table use, at the following low prices:

LIST OF POTATOES AT ONLY $2.00 PER BARREL FOR FIRSTS OR $1.25 PER BARREL FOR SECONDS.

Monroe Seedling, Rural New-Yorker, State of Maine. We may be able to offer other varieties at these prices later, but these three are all we now have at that figure.

POTATOES FOR $2.50 PER BARREL FOR FIRSTS, AND $1.50 PER BARREL FOR SECONDS.

Early Thoroughbred, Freeman, New Queen, Carman No. 3.

POTATOES AT $3.00 PER BARREL FOR FIRSTS, AND $1.75 PER BARREL FOR SECONDS.

Triumph, either Red or White; Early Ohio, New Craig.

POTATOES AT $3.50 PER BARREL FOR FIRSTS, OR $2.00 PER BARREL FOR SECONDS.

Early Bovee and Manum's Enormous.

Potatoes shipped during the month of November will be at my risk of freezing, providing the orders are made soon, so that we can get them off before freezing weather sets in.

OUR FIRST KILLING FROST.

On the night of Oct. 27th we had the first frost that laid low tomato-vines, and every thing of a like nature. We feel thankful for the long growing fall with its abundance of rain.

"WATCH POUDER'S AD"

SEE THAT WINK?
BEE SUPPLIES.
Root's Goods at Root's Prices.

Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.

WALTER S. POUDER,
512 Mass Ave., Indianapolis, Ind.
In writing, mention Gleanings.

Ferrets! 800 ferrets now ready to ship. Also Italian bees and queens. Belgian hares $2.00 per pair. Price list free.
N. A. Knapp.
Rochester, Lorain Co., Ohio.
In writing, mention GLEANINGS.

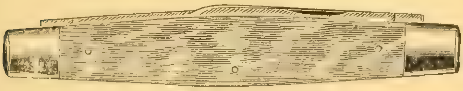
BIG PREMIUM OFFER.

Choice of the Below-named Articles Free for Your Own Renewal of Gleanings with $1.

Stop and Think What This Means.

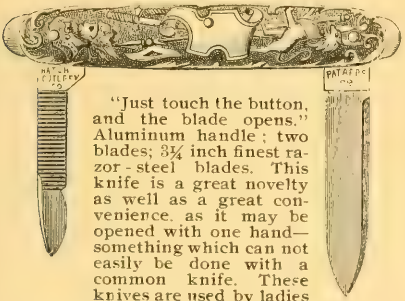
IT IS virtually a year's subscription to GLEANINGS for only 50 cts., as the premium is regularly listed at 50 cts. in our price lists. Of course the above liberal offer holds good only when all arrearages, if any, are paid up, and the $1.00 sent for the year's subscription in advance, the advance subscription only counting for the premium.

Queen-cell Knife, No. 278-N.



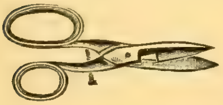
Two blades; brass-lined; German-silver tips; extra-fine steel; length, closed, three inches. We have this knife made expressly for us, and branded with our own name. You can't buy it at any other place on earth. It's the neatest pocket-knife made—a handsome present for either ladies or gentlemen. Excellent for cutting out queen-cells.

Automatic Knife.



"Just touch the button, and the blade opens." Aluminum handle; two blades; 3¼ inch finest razor-steel blades. This knife is a great novelty as well as a great convenience, as it may be opened with one hand—something which can not easily be done with a common knife. These knives are used by ladies and gentlemen through the United States and Europe.

Button-hole Scissors, No. 800.



These are 4¾ inches long; blade beveled; has screw on the side, adjustable for cutting different sizes; polished.

THE A. I. ROOT CO., Medina, O.

IF YOU WANT BEES

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IF you are not now a subscriber, send me $1.00, and I will send you 12 back numbers, the Review from the time your subscription is received to the end of 1898, and then for all of 1899. The sooner you subscribe the more you get.

◆

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Honey Column.

CITY MARKETS.

MILWAUKEE. — Our market continues about the same as when reported last. Receipts fair; demand steady. There is a lack of fancy, yet the stock is good. Shippers should attend more closely to grading shipments, and having uniform quality in each case to draw best prices for *best* quality. We now quote fancy 1-lb. sections at 12@13; A No. 1, 11@12; No. 1, 10@11; dark or amber, 8@9; extracted white, in barrels and kegs, 6@7; dark, in barrels and kegs, 4@5½; beeswax, 26@27.

Nov. 9. A. V. BISHOP & CO., Milwaukee, Wis.

DENVER. — Our market remains about the same. The receipts are fully up to the demand, and we can quote No. 1 white comb at 11½, put up in our cartons or 24-lb. glass-front cases. Our trade on extracted is still growing, and we can handle large quantities of water-white grade. Can quote No. 1 white at 5½@6; beeswax, 20@25, according to quality.

Nov. 10. R. K. & J. C. FRISBEE, Denver, Col.

ALBANY.—Honey market steady—the mild weather helping it some; prices unchanged. Fancy white, 13@14; No. 1, 12@13; No. 2, 11@12; mixed, 9@11; buckwheat, 8@9½; extracted white, 7@7½; amber, 6@6½; dark, 5½@6.

MACDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Nov. 9 Albany, N. Y.

COLUMBUS.—Demand somewhat lighter on fancy white comb, but market trade is wanting buckwheat, amber and No. 2. white. Fancy white, 14; No. 1, 12@13; No. 2, 10@11; amber, 9@10, buckwheat, 8.

THE COLUMBUS COMMISSION & STORAGE CO.,
Nov. 8. 409-413 N. High St., Columbus, O.

BUFFALO.—Below I quote you the market price of honey. Fancy, 13@14; A No. 1, 12@13; No. 1, 11@12; No. 2, 9@10; No. 3, 7@8; dark honey or buckwheat, 7@9; extracted, 6@6½; tumblers, $1.00@$1 10 per dozen; beeswax, 27@30, and scarce. The trade has improved lately for white honey; dark selling pretty well. The crop this season is running more to dark than it did last year.

W. C. TOWNSEND,
Oct. 29. Buffalo, N. Y.

PHILADELPHIA.—Honey selling very freely, but the supply is equal to the demand. We quote fancy white at 15; No. 1, 13; amber, 10; extracted white, 8; amber, 6; dark, 5; beeswax, 27. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Nov. 20. 10 Vine St., Philadelphia, Pa.

CHICAGO.—There is no change in this market since last quoted Honey of all kinds meets with good sale at prices there given. As this is the time of year when sales are most active, receipts are quickly disposed of.

R. A. BURNETT & CO.,
Nov 8. 163 S. Water St., Chicago, Ill.

CLEVELAND.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½; light amber, 11; buckwheat, 9. Extracted, white, 7; light amber, 6.

A. B. WILLIAMS & CO.,
Nov. 9. 80-82 Broadway, Cleveland, Ohio.

WANTED—Can use from 2000 to 4000 lbs. of white-clover extracted if it is good and thick, and not mixed with any other. Can also use some goldenrod extracted. A. J. NEWMAN, Belvidere, Boone Co., Ill.

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H. VAN VRANKEN, Union City, Mich.

FOR SALE.—800 lbs. comb honey—500 white clover, 300 buckwheat. WM. VAN AUKEN, Ellisburg, N. Y.

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EMIL J. BAXTER, Nauvoo, Hancock Co., Ill.

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FOR SALE —1000 tumblers of pure light-amber honey, 10c each; twenty 60-lb. cans, 6½c; comb, 13c.
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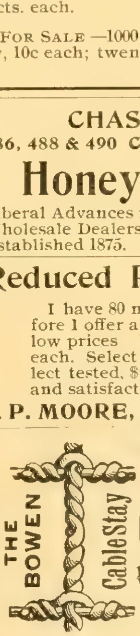
J. P. MOORE, Lock Box 1, Morgan, Ky.



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Wm. A. Selser,
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began in the American Bee Journal Oct. 1, and you will thus get all of that great convention. Send for free sample copy of the Bee Journal, if you never saw it. But you would better save time and send on the dollar now.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO. $1.00 PER YEAR MEDINA, OHIO.

VOL. XXVI. NOV. 15, 1898. NO. 22.

STRAY STRAWS FROM DR. C. C. MILLER

PUT THIS DOWN as a rule, that it's worse than waste time to level down sections any more than to remove the soiled edges.

AN APOLOGY is due from Hasty to Mrs. Bee for saying that "Mr." Bee knows "his" own business best in seeking nectar in the right place.—*Review*, 306.

THE OLDER bees are, the smaller loads of pollen they carry. A Belgian journal says this is because the hairs on their legs are rubbed off as they grow older.

THOSE EXPERIMENTS of Fr. Greiner, p. 794, are very interesting. Now let him determine whether a queen takes 15 or 16 days from the laying of the egg in a strong colony.

R. L. TAYLOR thinks bees gather more pollen in the morning because, in many varieties, as in corn, "the pollen is either gathered by the bees or falls away to do its proper work early in the day, so the bees have none to gather later."

I DON'T SEE the entire appropriateness of Mr. Taylor's wicker chair in the matter of ventilating supers, but I'm entirely with him in believing that a gap in a separator doesn't help ventilation which is up and down, not sidewise.—[I differ from you both.—ED.]

EDITOR HUTCHINSON has spoken of the natural comb in sections being "friable," and now, *Review*, 318, he speaks of its "brittle character." Surely, that can hardly be a matter of "locality." I never saw any friable or brittle comb unless it was very old and dry, or else very cold.

CRITIC TAYLOR quotes a Straw on page 645, and says I overlook that Doolittle says Nature's plan is to put the *first* eggs in the center. Bro. Taylor, I think you're the overlooker. Look at p. 513 and 624 again; and if I understand the English language Doolittle says it's Nature's plan to lay *all* the eggs in the center, "where they should be."

S. A. ROBERTS is right, p. 802. I'd "feel a lot happier" if I could winter outdoors. But, friend Roberts, whenever I try it I lose five times as many colonies as in the cellar. Perhaps you have a more sheltered location. [It is just the other way here, doctor — so much for locality; and yet I am not sure but if I were in Marengo I should winter just as we do here in Medina.—ED.]

THE TWO THINGS bee-keepers are most anxious about are:

1. How to get a crop of honey.
2. How to get rid of it.

[If there were nothing further to learn by way of solution of these two questions, there would be no use for bee-journals or bee-books.—ED.]

IN EUROPE, bee-journals don't keep up to date as close as on this side. Reports of the big German convention are strung through the journals for many months. In October *L'Apiculteur*, a leading French journal, the dates of the 14 letters from correspondents run from Feb. 2 to Aug. 29, the average date of all being July 25.

GEOGRAPHICAL DISTANCES may account for the greater numbers that attend German conventions, but you can't account in that way for the thousands of members that don't attend. [It only emphasizes the fact that we can, if we take the right course, increase the membership of the U. S. B. K. U. to a size equal to that of any German association.—ED.]

SOME TIME AGO mention was made of plain sections being used by Morrison or some one else, without separators. As yet I think we have not been told how they were spaced apart. I'm curious to know. [As yet no communication has come in from Mr. Morrison regarding the manner in which he would separate the plain sections. If he sees this I trust he will enlighten us.—ED.]

THE *Review* has been getting "views" as to the Department of Criticism. The consensus of opinion is that the department fills "a long-felt want," and is doing a grand work. Wonder if that's another illustration of the fact that successes are reported more freely than failures, and that replies to such calls will bring responses only from those favorably inclined. [Notwithstanding I *know* the past season has been one of general failure, so far as honey is concerned, we have had more reports this year encouraging than discouraging. I believe it is true that it is easier to report successes than failures. Yes, it is easier to commend a publisher for following a certain course than to do otherwise —Ed.]

To the question in *American Bee Journal*, "In casing comb honey for shipment to market, what would be your rule as to the row of sections next to the glass?" only four or five of the twenty-two repliers seem to favor having them better than the rest of the case. The remainder agree with Doolittle, who says "that they be as good as the average of those in the case, then turn 'face' side out." I think that's the ground Doolittle has held all the time, but he has allowed himself to be misunderstood.

E. E. Hasty, in *Review*, proposes to stand up beside Editor Root against Editor Hutchinson and me, because he *never noticed* that bees disliked black more than white. But, friend Hasty, the testimony of a man who saw me commit theft is not killed by the testimony of another who did *not* see the theft. [In view of the overwhelming testimony to the effect that bees do regard with disfavor the color black, I have been obliged to acknowledge that I was wrong. Sorry, Hasty, to get on the other side of the fence when you so kindly offered to stay on my side.—Ed.]

The Apis dorsata in the Philippines, as reported in Chicago *Tribune*, is "the largest variety of this species." They are such persevering workers that they have lost dexterity with their stinging apparatus, "and it takes them 20 or 30 seconds to get their sting in working order." [You do not say, doctor, whether or not you believe this statement. I am under the impression that *Apis dorsata* can sting, and sting viciously. I should doubt very much whether the average native or European would allow a bee of this sort to remain on any portion of his exposed anatomy for 20 or 30 seconds, trying or getting ready to sting. It must get in its work in a much shorter time.—Ed.]

Those queen-cells, p. 647, seemed to me a little too pointed. Critic Taylor says, "If our friends will have patience those cells will all be nicely rounded off within a few days. I have never noticed any difference in the shape of the points of cells internally; but often, after cells are capped, the bees decorate the free end with a point of wax and pollen; but this is all carefully removed before the cells are ready to be opened by the inclosed queens." And no doubt he is right. [Mr. Taylor may be partly right; but we had one colony last summer that seemed more inclined to build pointed cells than rounding. It was the best cell-builder we had. Yes, I know bees will sort o' sandpaper off the ends of the cells just before hatching.—Ed.]

I believe you wrong Mr. Taylor, page 807, Mr. Editor, when you call his reference to Doolittle "sarcastic." Please don't think that, because he makes too free use of sarcasm, *every* thing he says must be sarcastic. The strength of Doolittle's name *does* add weight to his testimony, and that added weight makes it "heavy testimony." I think Mr. Taylor was speaking honestly and not sarcastically. Please apologize for misjudging him. [Perhaps you are right; but when I first read it over, and even now as I read it, the impression seems the same. However, I do not wish to place any wrong accusation against our friend, and I therefore gladly give him the benefit of the doubt.—Ed.]

Measurements in fractions of an inch are given in *L'Apiculteur* as follows:

	Length.	Width, tip to tip of wings.	Diameter of thorax.
Queen......	.63 to .71	.95	.177
Worker ...	.47 to .51	90	.157
Drone.......	.59	1.10	.216

[I have experimented quite extensively with perforated zinc, and have found that $\frac{162}{1000}$ was about as narrow as a bee could get through. But $\frac{165}{1000}$ is about the correct figure, if my experiments mean any thing. I notice in the table above that the size of worker is given as $\frac{157}{1000}$ at the thorax. I should be inclined to believe it correct, for if any larger it could hardly squeeze through any thing smaller than $\frac{162}{1000}$.—Ed.]

L. A. Aspinwall, in *Review*, p. 298, speaks as though Editor Root and I had been using slang. I plead not guilty. I am in accord with friend A. in his liking for pure language, have always opposed the use of slang, and if he will point out the place where I ever indulged in it I shall be greatly obliged, and will try to avoid a repetition of the offense. [Look here, doctor, you are real mean. You place the responsibility for the alleged use of slang upon *my* shoulders. I, too, will plead not guilty — that is, if "scrooch" for "crouch," "smoled" for "smiled," and "canine" for "dog" are not slang, as I firmly believe they are not. Inadvertently I may have used a word that might be so classed by competent judges, but I do not now recall it. Slang, as Mr. Taylor says, has its birth in places of low resort. I can not believe that the words I have used had their origin in such places; but, after all, may be it is a good thing to have a shaking-up on this subject, providing it tends to purer language.—Ed.]

Replying to your footnote at the bottom of p. 790, I don't know how much flavor is imparted to honey by comb, but I don't believe any that the most careful tasting would ever appreciate. New comb *has* a flavor of its own, but I don't think that flavor soaks into the honey, and the flavor of the comb is so exceedingly mild that I think it's entirely lost when honey is in the mouth. [All I know is, as I have stated before, that visitors often remark regarding the beautiful aroma that they detect when going into our wax-room. They say it smells like honey, and yet there is not a pound of honey in the room. Does it not seem to indicate that wax has an aroma of its own? Why, a bee-keeper once asked what we put into our wax to make it smell so nice. Nothing at all. I don't suppose that our wax smells any better than the wax of any other foundation-maker. Another point: If honey be stored in a pine barrel, it will absorb some of the piny flavor of the wood. Now, why would not honey absorb a flavor from wax if allowed to stand long enough in it? And again: There are a good many people who prefer comb to extracted. If this were confined to the *consumer* who knew nothing about bee-keeping, we would assume that this preference was based on the supposed purity of the honey in the comb as against that free from the comb. But how do you account for this same preference on the part of many bee-keepers who, while acknowledging the purity of either, prefer section honey? I know you may say there are a good many who prefer extracted; but do you *know* that this number do so for any other reason than for *convenience in eating?* Only yesterday I was eating a nice sample of comb honey and one of extracted, both clover, but it seemed to me the comb had the better flavor. You may argue that it may have been left on the hive longer. But I do not think that will explain it.—Ed.]

GENERAL CORRESPONDENCE

LARGE HIVES.

Comparison of Wintering in Large and in Small Hives; Depth of Frames an Important Feature.

BY C. P. DADANT.

In the consideration of this question I trust the reader will not lose sight of the fact that, when I speak of small hives, I include as such both the eight and ten frame Langstroth, and that, although I much prefer the ten-frame hive to the eight-frame, I still consider it as too small. When I speak of large hives I mean deep-frame hives, either of the length of the Langstroth or of the length of the Quinby, which is the style we use. The greatest advantage, in my mind, resides in the depth of the frame. The Quinby frame has a depth of 11½ inches, and is, therefore, over two inches deeper than the regular Langstroth. This frame is not a new pattern. It was used and recommended by Quinby long before the invention of the honey-extractor; and some of his largest crops, when leading apiarists were few and honey was scarce, were harvested in this style of hive. A number of Eastern apiarists, large producers, use it yet, and it is quite probable that, if it had been patented and advertised as was the Langstroth pattern, it would still be the leading hive. But Mr. Langstroth held that the Quinby invention was an infringement, as perhaps it was, for I am no judge in such matters, and the fear of infringement certainly deterred many an apiarist from using it.

If I did not have my own experience to guide me I could still perceive that a number of our leading men recognize tacitly that the Langstroth frame is too shallow, and the hive inadequate for a prolific queen, since so many men report favorably on the use of a double story, although they all recognize that such an addition makes the brood-apartment too large for the raising of comb honey. But the purpose of this article is to show you, from facts and reasoning, that the deeper frame and larger hive are better for wintering, and so I will pass to this subject.

The facts I base myself upon are those that we have seen under our own eyes, of the better success for winter of the large deep hive. I believe I showed you plainly, in a previous article, why the colony might be more populous, from the greater amount of space, the greater quantity of stores, and the greater ease that the queen has in finding empty cells, in the larger circle which is furnished to her on a greater circumference in each comb, so that she has to spend less time in hunting for cells. We thus have stronger colonies for winter, which is in itself a great advantage, as the number of bees has much to do with their ability to keep warm, and their ability to retain the heat has also much to do with their honey consumption. A weak colony suffers from the cold, and is compelled to eat more. The bowels of the bees are then more quickly loaded with excrement, and their restlessness is increased. Perhaps these differences between one colony and another are very slight; but it is in little things the success of the bee-keeper resides. Was it not Heddon who said, "This business of ours is a business of details"? Yes, it is a "business of details," and those details make the failure or the success. That is surely why the careful, solicitous, attentive apiarist, who can not bear to see a thing out of place in his apiary, and must have every thing "just so," is the successful bee-keeper.

But to me the greatest advantage of the deep large frame is in the greater ease the bees have in reaching the honey and in keeping in a more compact cluster. With a deep frame, as much honey and as many bees can be conveniently located in six combs as in eight combs of a shallower frame, and there is less danger of their chilling, and very much less of their starving. I know that many of our good writers say that the bees can and do move as readily sidewise as upward to the honey in very cold weather; but I can not agree to it, for I have, in practice, often seen the reverse of this assertion. We must not take, as an instance, an ordinary winter, when all the bees come through without trouble. It is the hard and destructive winter that should be used as a criterion, and I have often seen cases of starvation with honey on the same comb, but at the back end, where it was too cold for the bees to reach it. The deeper frame, of the same length as the Langstroth, has more honey above the bees, and as much at the rear, or perhaps also more, at the rear of each comb, than in the Langstroth frame.

If the bees winter better they are better able, in spring, to stand the variations of the atmosphere; there is less spring dwindling, brood is reared earlier, and our colonies are better able to — let me quote Hutchinson —

"raise all the bees possible before the opening of the main honey harvest. We must have the workers, or the harvest will be in vain."—*Review*, page 179.

Another thing: In your small hives you talk of dummies (division-boards as we call them), but very few use them, because the hive is already so small that a swarm is hardly safe that does not occupy most of its combs in winter. In a large hive we have a special use for the division-board, and do not consider a hive complete without one, and that is why we make an eleven-frame hive, one space being occupied by the board. When winter comes, if we have colonies that are no stronger than yours, and can occupy only six or eight of those large frames, we simply remove the remainder and move up the board. Then this empty space is filled with leaves (we use forest-leaves, but other warmth-giving materials are equally good), and we increase our chances of success by all the additional shelter that this filled space is furnishing on the stormy side, which, with us, is always on the west; for we take good care to have the cluster moved over if needed, so as to have the shelter on the proper side. Perhaps you will think this a small matter; but remember Heddon's "it's a business of details," and so it is; and it's always a comfort to me to get a portion of the arguments from "the other side."

In my next I will make a comparison of one large hive versus one two-story hive. Dr. Miller's plan is certainly good, but I like mine better.

Hamilton, Ill.

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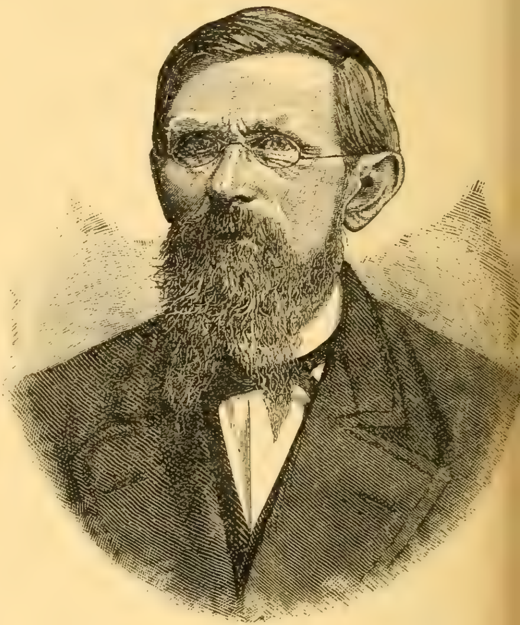
C. J. H. GRAVENHORST.

A Short Sketch of His Career as a Bee-keeper.

BY DR. C. C. MILLER.

The news of the death of Gravenhorst came as a shock. It seemed like the bereavement of a personal friend who brought Germany very close to America. True, he had been prostrated for a long time, and at his advanced age it was hardly to be expected that activity could be prolonged for many years; still, the wish being father to the thought, one could not help hoping and expecting him to be once more at the fore with all his wonted activity. And what an activity that was! Gravenhorst was one of the men whom years do not make old. Up to the last his writings showed the vigor of youth. His clear views, drawn from his many years of practice, observation, and reading, showed him to be a master in his profession, and the kind heart that always shone through all he said made every one glad to assign him the eminence he so honestly held.

Christof Johann Heinrich (Christopher John Henry) Gravenhorst was born Sept. 26, 1823. He fitted for the profession of teaching (a profession from which the ranks of bee-keepers in Germany are largely recruited), and began teaching in 1848 at Wispenstein; then, after teaching in Seesen, he obtained a permanent position in Braunschweig. Here he was married, in 1855, to Francisca Bielitz, with whom he lived happily, one son and two daughters being born to them. The daughter Francisca is a practical bee-keeper whose graceful writings have occasionally appeared in print.



CJHGravenhorst.

Growing deafness obliged him, in 1857, to abandon his profession as teacher, and he then adopted bee-keeping as his sole occupation for the remaining forty years of his life. He was a pupil of Dzierzon, and through his bees not only supported his family but accumulated sufficient to purchase an estate in Braunschweig. Having worked unceasingly with straw hives, and knowing well their advantages, he conceived the idea of retaining all their advantages, so far as possible, and at the same time providing them with movable combs. After many trials and failures, his hive, the "bogenstuelper," resulted (*bogen*, because the tops of the frames are bow-shaped; *stuelper*, because the hive is turned up when opened). This hive is described in a previous volume of GLEANINGS by Gravenhorst himself. If the invention of this hive were the only work of his life, it would give him undying fame. Although little known in this country it is highly prized and largely used by great numbers across the sea. He spent many happy years in Braunschweig, his apiary paying well; but an unhappy lawsuit with a hostile neighbor decided him to leave there and settle on an estate near Gloewen. Guileless himself, he was not on the watch for guile in others; and a snare in the terms of purchase of his property was so skillfully arranged that he lost all.

Undaunted by misfortunes he courageously commenced again the struggle, settling in Wilsnack, where fortune smiled upon him; his apiary flourished; slowly but surely he retrieved his lost fortunes, and left to his family a magnificent property. Long years were spent by him in Wilsnack, beloved and honored by all about him, till the weakness of age laid him upon a bed of sickness from which he never arose. On the morning of Sunday, Aug. 21, 1898, surrounded by his loved ones, peacefully and painlessly he slept away this life to awaken in the life beyond.

His hive, his beautifully written text-book on bee-keeping, "Der praktische Imker," not to mention other works, and his bee-journal, *Deutsche illustrierte Bienenzeitung*, founded by him and conducted by him for the past fifteen years, are monuments that hardly sufficiently show the high place he holds in the hearts of those who knew him best.

Ruhe sanft, edler Freund.

Marengo, Ill.

SOURED HONEY AND ITS USE.

Honey Vinegar, etc.

BY FR. GREINER.

It would seem that, during such a poor season as the one just past, when the greater part of our colonies were three months in storing only 20 or 25 pounds of honey in sections, the bees would have had ample time to extract all the superfluous water from the raw nectar before sealing it; or in case the condensing or ripening process should be simply a process of evaporation (on this point the minds of bee-keepers, I think, are still at variance), then it would seem there had been plenty of time for any honey to become thick enough to keep indefinitely.

But things did not work that way, and I do not know that any one knows just why. It so happens that we have more soured honey now than I have ever noticed before in one season. There were many sections that had been at one time during the summer all sealed and finished nicely; but as the contents of some of the cells had begun to ferment, and as it had burst the cappings, allowing a part of the honey to ooze out, the bees had uncapped such cells, removed the honey, cleaned out the cells, and, later, filled them up again—in most cases, however, without finishing or sealing them. In some cases the mischief would be on only one side of a comb; then, again, on both, the open and the sealed cells being intermingled, often at the rate of one to three.

When taking section honey out of the supers to crate for market I came across some sections lately that contained soured honey in blotches, with cappings raised half-globe fashion, and the honey partly oozed out, such blotches covering one-half to two-thirds of the whole surface. Of course, all such honey is fit neither for market nor for the table, nor is it suitable to feed to the bees at this season of the year.

Not long ago I saw it stated somewhere that sealed honey, if kept in the hive till late, would continue to improve or ripen — that is, lose a part of its moisture. I know not how true this is; but with this idea in mind I placed quite a number of sections containing soured honey into a super along with some unfinished sections, all to be returned to a colony of bees that was being fed constantly and abundantly for the purpose of getting unfinished sections finished up. This was after the honey season was over with us, or during the month of September. The room in which the colony that was expected to do this work stood was kept very warm during all the time the experiment lasted — yes, even weeks before, during the buckwheat-honey flow. My aim was to have the temperature never go any lower than 80°, and from that up to 95. I succeeded in this quite well; but when I made an examination two weeks later my soured honey was soured honey still, except where it had been removed by the bees and replaced by honey from the feeder. The experiment turned out just as I expected. There is no use in trying to improve soured honey.

But what can we do with it? that is the question. Mr. C. N. White, of England, who, in the *Amer. Bee Journal*, gave not long ago a series of interesting articles on the management of bees, etc., advises, in the Aug. 25th issue of that journal, to "throw away" such honey. I do not fully understand what he means by that. I am not in the habit of throwing away any thing that can be made use of. I claim that I can get just as much out of the soured honey as I am able to get for the unimpaired product. The explanation is easy enough. The soured honey is already on the road to making vinegar, and so I just let it go on that way. As vinegar it will bring me 15 cents per pound (the outlet, however, is only a limited one); and what soured honey I have we can easily work off that way. One pound of honey is sufficient to make a gallon of vinegar by diluting it with water to that extent, and then giving it time.

There are a few people in my vicinity who have an idea (perhaps preconceived) that honey vinegar is not as good as cider vinegar. Some one even claimed it would not keep pickles. But these people know but little about the matter. I have no idea they ever tested genuine honey vinegar. I say, honey vinegar is all right; and still I do not use honey alone, but take half cider and half honey-water. It does not matter much about the exact formula. Should I be short of suitable honey I splice out with maple sap somewhat sweetened with honey. Section honey containing pollen answers nicely for this. I am not sure but the pollen is a valuable adjunct to the honey vinegar. It sets the mixture to fermenting sooner, and is more lasting, and that is what we want.

For years I have managed somehow to keep a few barrels of vinegar on hand, and a few more "making." Of course, it involves the expense of buying barrels. A good cask holding 52 gallons may be bought for $1.00 or $1.25 ; a gasoline-barrel for 75 cents. Either will answer ; and, when once purchased (and taken care of), will last many years ; so this expense is not so very great after all.

I have now quite a trade started in vinegar. It is known for miles around that I keep it for sale, and at this season of the year few days pass by without our selling some.

I want to mention a peculiar fact connected with my vinegar trade. My best customers are people who make the most cider. But it never keeps long enough with them to make vinegar. The barrels leak (probably through the faucet). We make cider in years only when apples are low in price. Two years ago we put in a good supply, and now I keep diluting it with honey-water, as I have the honey.

In regard to converting cider or honey-water into vinegar, I want to make mention of the well-known fact that the barrels with their contents should be kept in a moderately warm place in order to hurry up the process, for if kept in a cool cellar it may take from two to three years before the vinegar-point is reached.

Naples, N. Y., Oct. 22.

EBRASKA
HONEY
THE A.I. ROOT CO.

A GENERAL INTERIOR VIEW OF THE APICULTURAL BUILDING AT OMAHA.—SEE EDITORIAL.

SOUR HONEY.

Is it Due to a Natural Acid in Honey-plants? An Interesting Article Regarding the Properties of Honey in General.

BY E. S. ARWINE.

Concerning that sour-honey discussion appearing in GLEANINGS for Aug. 15th, I would say that, in my opinion, the acid was a normal constituent of the honey, and it had not fermented, and could not (if granulated) unless water had been added. Honey weighing eleven or more pounds to the gallon contains too much saccharine matter to ferment. Of this you can easily convince yourself by adding water to reduce it to eleven pounds, and stirring it thoroughly, so as to produce a uniform mixture. If not thoroughly mixed, the lighter sweetened water will rise to the top, and that might sour; and I would remark that honey whose density has been reduced by adding water will ferment a little quicker than nectar of like density when extracted. Here we should make a distinction. Honey will not sour, but nectar will. Molasses will not sour, but sweet water will ; and as we would not think of calling sweet water *molasses*, neither should we think of calling nectar, that is thin enough to sour, *honey*.

When I first began extracting, about 1878, I frequently extracted honey that weighed only 10½ to 11 lbs. per gallon, and I never had any sour, although I frequently keep it from one to several months. Again, I would point out that, when nectar has been extracted and fermentation begins in it, its tendency to granulate is arrested. Souring honey (nectar) can not granulate, or else my observation is all at fault; wherefore I conclude that honey that granulates is always pure unless sugar or glucose has been added to nectar. I have made no experiment in the line of mixing, so I can not say at what density crystallization begins.

Mr. Clayton's believing he could have had a dozen sources of flavor assigned to that honey shows how extraneous circumstances help to form guesswork opinions, and how little reliance can be placed on such opinions. Whether or not that particular lot of honey derived its acidity from citrus flowers is guesswork; but here is one thing I do know. There is a tiny vining plant, in habit somewhat resembling the wild peavine, that produces acid honey approximating a mild tartaric-acid flavor, but always decidedly acid; and it is about as good honey as any man ever smacked his lips over, if he does not object to a pleasant sour mingled with his sweet, which reminds me of something I read in a paper in 1852:

MARRIED.—On the 21st inst., Mr. Ebenezer Sweet to Miss Jane Lemon.

How beautifully extremes do meet
In Jane and Ebenezer!
She's no longer sour, but Sweet,
And he's a Lemon squeezer.

I will venture this guess, that that honey was sour when extracted, and could increase in sourness only by concentration of its acid by evaporating its watery parts. Its granulation proved it to be too pure to ferment.

I have no doubt that, had they searched the field where that honey was produced, they would have found a small vining plant, with a red or reddish stem, small oval leaves, and a tiny white flower on which the bees were busy while that honey was being stored. This is the source of the acid in that honey; and as the honey was not uniform in color, so the bees got honey from other sources at the same time they were storing from this little vine, which, I believe, yielded all the acid. This vine seems to yield honey nearly every year; but if there is plenty of honey from other sources the bees neglect it entirely.

Three years out of nine since I have kept bees in this (San Luis Obispo) county the honey gathered from about April 25 to May 20 was perceptibly acid. Two of these years the sage failed, and was very slim the other. This vine blooms from April 20 to July, but was always abandoned when the barberry began to yield freely, about May 20 to 25. The sour honey from this vine is water-white, and it weighs about 11¼ lbs. per gallon. It failed to yield honey this year. Barberry honey weighs 11½ to 11¾ lbs. to a gallon; and I have never seen it granulated when pure. The barberry has not failed in nine years. This dry year was the shortest, and yet we took 850 lbs. from 80 colonies, and left plenty for winter stores. This year the tarweed is a flat failure—the only one in nine years. We usually depend on it for winter stores after extracting two or three times.

Dove, Cal., Aug. 27.

APICULTURAL LITERATURE.

Slang or Humorous Expressions.

BY DR. C. C. MILLER.

From *Bee-keepers' Review*, p. 280, I quote the following, written by Hon. R. L. Taylor, in the Department of Criticism:

"Dr. Miller justifies the use of the class of words to which I object because 'a good many like it.' The multitude likes it. The more's the pity. What we like is easy. We are prone to it as the sparks to fly upward. *Facilis decensus Averni.* The ease of it is the evil of it.

"The language of the masses is rotten with it. Its breeding-place is in the dens of thieves, and in the holes reeking with the fumes of alcohol and tobacco. Its appearance in print is an echo from such places. To our youth it is more familiar than their mother-tongue. Even our educated youth can hardly utter a sentence without introducing it. Can citizens, especially can parents, look upon such a condition of things, and encourage its continuance by using the same expressions in public print?"

I suppose what called forth the first sentence in the quotation was a Straw in GLEANINGS, page 609, in which I said, "R. L. Taylor, the *Review* critic, doesn't like the way the editor of GLEANINGS talks when in playful mood. A good many like it. I rather like to say 'sass' and some other things playfully." The class of words that I justified because "a good many like it" was "sass" and some other words used playfully, the plain inference being that "sass" was a fair representative of the class. Equally plain is the inference that this is the class of words to which I object, because "a good many like it." If what Mr. Taylor says in the second paragraph of the quotation is true, I am doing a terrible thing to justify the use of any such language, and should earnestly devote the remainder of my life to help undo the mischief already done.

He says, "The language of the masses is rotten with it." The word "sass" was originally the vulgar form of the word "sauce," that is, as used by the uneducated masses. Less frequently used in that way now, it has come to be classed as a humorous word, and as such I justify its use. A little more humor at the right time and in the right place will do no hurt. To say that language is made rotten by the use of humorous words is a stronger statement than the truth will warrant.

Mr. Taylor says: "Its breeding-place is in the dens of thieves and in the holes reeking with the fumes of alcohol and tobacco." Is it possible that Mr. Taylor thinks that "sass" and the two other words that he mentions, "scrooch" and "smoled" (which I think should be "smole"), had their origin in any such place? If I am not greatly mistaken, the word "sass" had its origin in the homes of our New England ancestors—homes, albeit peopled by an illiterate folk, yet as clean and pure as any homes the blessing of God ever smiled upon. No worse charge can probably be laid to the word "scrooch" than that it is illiterate. Mr. Taylor can not conceive how it can convey any other meaning than is conveyed by "crouch." To me it conveys a little different and a stronger meaning than "crouch." That is merely an admission of illiteracy on my part, because I am more familiar with "scrooch" than "crouch" in every-day conversation. I do not justify Mr. Root in using it as a correct word in GLEANINGS. He should use the correct word, so that his readers would learn, if they have not already learned, to attach to the word "crouch" all the meaning they now give to "scrooch." But because it should be cast out on account of incorrectness, it does not follow that it is right to slander it as to the place of its birth.

"Smole" bears upon it the marks of having originated, not in the bad places Mr. Taylor mentions, but among cultured people who could see the comical side of applying to verbs not coming regularly in the list, the rule to change the "i" of the present to "o" in the past, as ride, rode; write, wrote.

More likely than that either of these words had its origin in a den of thieves or in a saloon is it that the word "mugwump," to which Mr. Taylor says he makes no objection, had its origin in some such place, for it was at first used opprobriously by politicians as a name for good and true men who felt they had a right to vote outside of the strict party ticket.

I do not yield to Mr. Taylor in my admiration for correct, choice language. I enjoy reading it, and, so far as I have the ability, try to write it. But I do not find what Mr. Taylor says is true in my case when he says, "What we like is easy." I do not find it easy to write pure English that satisfies me.

At the same time, I do not believe that it detracts from good English to use at times humorous expressions, and to drop into familiar style. "A good many like it," among them those refined in taste and pure in thought, who perhaps could not, if they would, echo the vile language of the places Mr. Taylor accredits as the birthplace of the class of words whose use I justify.

Mr. Taylor's arraignment is entirely too severe. He could hardly be more severe if he were speaking of slang or obscene language. At one time, when I said something about Mr. Taylor's being somewhat given to scolding, he wanted me to cite a case. As an instance, I recommend to him the second paragraph of the quotation I have made from him at the beginning of this article: "The language of the masses is rotten," etc. If that isn't scolding, and severe scolding at that, then I have no correct idea as to what scolding is. Mr. Taylor should remember that one can catch more flies with honey than with vinegar.

Asked why he singles out GLEANINGS, Mr. Taylor replies in substance that he finds errors more plentiful there than in the other journals. Can it be possible that Mr. Taylor thought what he was saying? GLEANINGS is not as near perfection as it should be, but I feel sure there are several others in which Mr. Taylor would find more plentiful picking; and if he so desires I will privately name to him another bee-journal which I think he will find contains on a single page more glaring errors than he will find on any 100 consecutive pages of GLEANINGS.

In reply to the question why he neglects to criticise the *Review*, Mr. Taylor says, "Well, Editors Root and York attend to that thoroughly, and sooner than I am able to get into print." If these two gentlemen have made a business of criticising the *Review*, I think it has escaped the attention of their readers. *Review* is a good journal, and ably edited; but I venture to say that if Mr. Taylor will look through it with the same desire to find errors with which he scans GLEANINGS, he will find for every error mentioned by Editors York and Root nine others left to the tender mercies of the *Review* critic.

I think—and the thought is strengthened by what I have heard other bee-keepers say—that one who knows nothing about Mr. Taylor except what he knows from reading his department of criticism will we likely to think of him as a man keen to find fault in others, and anxious to hold his victim up to public gaze in such a way as to give the most pain possible. Let us hope that he will mend his ways, and show himself in his true colors as a man full of the milk of human kindness, being a critic in the better sense of the word, and keeping always in mind the injunction of the couplet that heads his department:

> Blame where you must, be candid where you can,
> And be each critic the Good-natured Man."

Marengo, Ill., Oct. 1, 1898.

* * *

DRAWN FOUNDATION, AGAIN.

Tested in Convention, but no Gob.

BY L. STACHELHAUSEN.

In GLEANINGS for July 15 you published my letter concerning the new foundation. On the 17th and 18th of August the South Texas Bee-keepers' Association had its annual convention in Floresville. At this convention I showed to the members two sections of honey in which this drawn foundation was used. A large number of bee-keepers tested the honey, and nobody could perceive any difference between this artificial and the natural comb. Nobody could detect any fishbone nor any thing like it. This is of more value, as some bee-keepers had an unfavorable opinion of the drawn foundation. So we see it is a success in this respect too. Now a few words about the advantage of this foundation :

If we uncap a frame with sealed honey, extract it, and give it to a strong colony (that is, in summer time, and when no honey at all is coming in), we shall observe that the bees will at once occupy it and clean out the honey. The cell-walls will be gnawed off more or less; and the same wax, after it is chewed by the bees, is set on the edges of the cells, and is formed to a rim, which strengthens the cells and gives material for a further prolongation of the cells. If the same colony will get a frame with a full sheet of foundation, this foundation will not be touched by the bees at all. Whenever we give an empty comb without this rim on the edge of the cell, the bees try at once to form such a rim; and I am of the opinion that this is the main reason why drawn combs can be used as bait in the sections. When the bees have commenced to work on a comb they will continue to do so, and will fill the cells with honey when circumstances are favorable. If we use drawn combs for bait it is better to remove the rim. If this is so, the advantage of the new foundation compared with the old common foundation is that the new kind has side walls *without* this rim, while the old foundation has this rim without the side walls.

It is somewhat difficult to observe the way in which bees build new combs or draw out foundation. The bees are then so close together that we hardly see or distinguish the motion of a single one. I once happened to observe a few bees working out foundation in a section when we had about 100° in the shade, and I believe this to be the only condition in which this observation can be made.

We can observe that the rim of a cell always has a round appearance like foundation with the so-called round cells. The bees start the cells round, and they become six-sided by later manipulations. As soon as the cell needs a further prolongation the bees draw out this rim by taking it between their mandibles; and, pressing them together, the bee moves its head away from the bottom of the cell, in this way thinning the rim and stretching it out. It is easy to see that, by this manipulation, the cells, at first round, must necessarily become six-sided, because six cells are around one. As soon as this order is lacking, the cells will acquire quite a different form.

To smooth the now drawn-out side wall, some saliva is brushed on the wax, using the point of the tongue as a brush, and then that three-cornered piece of chitin, seen between the mandibles (called tongue-bone) is rubbed along the side wall on both sides. New wax scales are now chewed, and plastered around the edge of the cell, forming the rim again.

In the same way the bees start the midrib of the comb as a straight wall; but they start the side wall as soon as they get the place for it, and, by drawing from both sides, the wax, being a very soft material, is stretched till it is in the shape in which the least material is necessary, and so the well-known pyramidal form of the cell bottom is formed.

It is of great importance to have a correct idea of the way in which the bees build combs. It explains many observations. For instance, some bee-keepers have observed that the flat-bottomed foundation with very thin midrib will show the pyramidal form of the cell-bottom more or less after they are drawn out by the bees (I myself have had no experience with this kind of foundation). If this is so (and I do not doubt it) the question arises why it was not so with the drawn foundation which The A. I. Root Co. made in 1897. This foundation had cells about ¼ inch deep. The bees gnawed off about ⅛ inch of this; but the remaining ⅛ inch had given enough stiffness to the foundation so that the midrib could not give way when the bees were drawing on both sides. It is plain now why the side walls of this foundation near the midrib were not thinned by the bees. I believe that this foundation would have given better satisfaction if the cells had been only ⅛ inch deep or less. It would be interesting if experiments in this line could be made.

So we see it is an improvement that the cells of the new foundation are ⅛ inch deep only. When the cell walls can not be made of natural thickness they should not be deeper, as the bees will gnaw them off, to remodel them to the rim and draw them out anew — that is, if the foundation is to be used for sections.

Another question is, "Can we manufacture and use an artificial comb for extracting or for brood-combs?" It would take too much space to consider this question now.

Cutoff, Tex., Sept. 1.

[We are just preparing a set of plates with shallower walls, having the same delicate base. These plates will turn the article out more rapidly, and come nearer to being a commercial possibility, than those we have formerly made.—Ed.]

VISIT AMONG THE BEE-KEEPERS.

In the Willow-herb District.

BY H. R. BOARDMAN.

Continued from page 799.

Upon this burnt land, in many places a honey-flora of considerable importance has sprung up — goldenrod, boneset, asters, and the famous willow-herb with which I was anxious to make a more intimate acquaintance. This kind of vegetation was confined mostly to the swamps and swampy land.

North of the burnt pine belt is a large tract of hard-wood-timber land interspersed with cedar swamps. This tract has not been devastated by the fire except in the swamps. In these have sprung up a great profusion of fall bee-forage. The willow-herb I found here in abundance mixed with the other bloom. Hard maple is the prevailing timber, with basswood, elm, and scattering trees of several other varieties. A profusion of wild red raspberries grows everywhere.

We reached Petoskey in the evening, tired with a long day's ride, and glad to welcome the sight of a comfortable bed, but were up and taking in the sights by the early light of the next morning.

Petoskey is a resort town, notably a hay-fever resort, composed largely of hotels and supply stores, with Bay View only one mile distant — a Chautauqua Society resort, a city of cottages of great beauty. Both these places are situated upon the sloping hillsides that reach down to the shores of Little Traverse (or Petoskey) Bay, and are thickly interspersed and surrounded with little native pines and other evergreen-trees, especially Bay View, which is almost hidden from sight in places by this profusion of native trees among which the cottages are built.

Petoskey Bay is a beautiful sheet of clear cold water, a mile and a half across, with a railroad and bicyle-path running around to Harbor Springs on the other side. These, with the boating facilities on the bay, furnish excellent facilities for diversion and exercise.

I rode around upon the wheel-path, and was charmed with the beauty that nature had so lavishly bestowed on every hand.

Meeting some small boys I asked, "What is the attraction at Harbor Springs? I say, how much of a place is it?"

"Oh! not much — a store and two apple-trees."

Having learned this much of the place I returned without visiting it.

I was informed that the hay fever is caused by the noted ragweed so common in Ohio and everywhere else except at these northern resorts, where it does not grow. I felt sure I should be able to find a sample of it, but entirely failed after looking very carefully.

I began to feel anxious about the honey and the bee-industry, and commenced visiting the groceries and supply-stores along the main streets. I found honey, but it was not up to my expectations. I could hear of no bee-keepers, except in a small way, among the farmers. Choice honey was mostly shipped in, and prices were high.

I found an old neighbor, with whom I stayed a few days, at Elmira, 25 miles south of Petoskey. It was here I visited my first bee-yard in Michigan. It was on a large farm of 640 acres, devoted to general farming. It is not surprising that the bees should be neglected. I found about 15 colonies arranged upon a bench about a foot from the ground. A good-sized stick of wood was placed upon each hive (I wonder where that idea came from). Here they wintered as well as summered. How is that for winter protection in this cold climate, where the mercury plays peekaboo down into the bulb of the thermometer, sheltered only by a stick of wood, and yet wintering as well as the average progressive bee-keeper winters in Ohio?

By permission of the proprietor I opened a few hives (or, rather, cases on top of the hives) which had not been removed, to see what was being done by the bees. The proprietor, being a discreet man, remained at a distance while I was about this. I must admit that I was disappointed on finding no signs of recent honey-gathering sufficient to induce comb-building — not even to show in whitening the combs. With all of the profusion of bloom which I had seen, and the willow-herb too, I felt sure I should find the bees doing good work. I was disappointed. The raspberry and hard maple would furnish a great amount of honey, but it comes so early in the season that the bees do not get built up strong enough to gather it.

Elmira is situated on an eminence — the highest, I was told, in the southern peninsula of Michigan. From here the streams run to every point of the compass. The Boyne River rises a mile and a half to the north, and runs along the line of the railroad, which winds around among the hills down a steep grade for nine miles to Boyne Falls. The streams and lakes here are clear and cold, and are well supplied with speckled trout and other fish—a fact of which I had the most ample and satisfactory proof, for I spent a day in the realization of my most ardent boyish dreams in capturing the speckled beauties in the Boyne, and then the breakfast next morning—oh! oh! The water in the stream where we fished had a temperature, by actual test, of 49° and was excellent to drink.

The potato crop, which is the important crop here, is an entire failure; same with corn; wheat badly damaged, the result of a severe frost on the 10th of July. Fruit is plentiful, and of good quality, especially apples. So I said to myself, as I cast a retrospective glance over the last season, other industries are attended with uncertainty as well as bee-keeping. Even farming is not always sure.

I cast a lingering glance backward from the moving train as I resumed my journey southward, followed by many pleasant recollections of my short stay; and the pleasant picture of Elmira, surrounded by its evergreen-wooded hills, was gone.

I looked out on both sides of the cars for a glimpse of some bee-yard, and was rewarded by seeing a good-sized well-arranged apiary with a man in the midst of the hives, with a smoker in his hand, puffing away vigorously. This was refreshing. It was just north of Manton, and was the only bee-yard I saw during the day's ride. This did not impress me that this part of the country was overstocked with bees.

I had decided to abandon my excursion-pass at Owosso, and make this a sort of headquarters from which to make short visiting excursions into the surrounding country. I reached Owosso at evening in time to drop W. Z. Hutchinson a card to look for me next day, and then wheeled out into the suburbs to make the acquaintance of a young German bee-keeper. He keeps a fair-sized apiary, and deals in supplies. He produces comb honey without separators; sells in his home market almost entirely, gets a good price, and has his cases returned.

I sampled his honey, which showed a little honey-dew.

"To whom do you sell so many supplies?" I asked him. He said, "There are a great many small bee-keepers scattered all over the surrounding country among the farmers."

The next morning I wheeled toward Flint, running out on a fine wheel-path for 3½ miles. I passed several shafts where they were mining coal, and met several teams with coal.

The roads were good, the wind at my back, but the weather was very hot.

East Townsend, O.

* * *

RAMBLE 155.

A Bee-keepers' Paradise.

BY RAMBLER.

When Pizarro landed upon the Isthmus of Darien he faced a turbulent band of followers; and in order to pacify them he drew a line upon the sand with his sword, and said, "On this side is Panama and beggary; on this, Peru and gold; which will you choose?" Every one chose Peru and gold.

Judge Levering, lest February, acted as my Pizarro; and, drawing a line upon the streets of Los Angeles with his cane, he said, as he pointed north, "This way leads to the alfalfa-fields of the northern portion of the State, and to honey and prosperity; this," pointing south, "leads to the starvation of bees and to the poverty of the bee-keeper."

Figuratively speaking I was in the condition of the Blasted Hopes bee-keeper so often illustrated in GLEANINGS, and was glad for this ray of encouragement. My friend added several more rays of hope and encouragement by inviting me to go north and aid him in the care of 265 colonies of bees that belonged to the estate of his brother, recently deceased, and of which he was the administrator.

Mr. Levering left for the scene of operations early in March. It did not take many minutes to decide to follow him; and my first duty thereafter was to put my own bees in condition to withstand the hardships of a dry season. They had ample stores to last them for many months, and to enable them to husband said stores I ordered Tinker zinc from The A. I. Root Co., and constructed enough queen-excluding honey-boards for all of the colonies. I made the wood-zinc board, for they are infinitely better, and more durable than a plain zinc, for they do not get out of shape and into innumerable twists.

I knew that my bees would be so enterprising as to rear a large amount of brood upon the stores already in the hives; in fact, they were already at it, and had a good amount of brood in the latter part of March, and hives well filled with bees. As fast as the honey-boards were prepared I confined the queens to one shallow story of the Heddon hive; and, with plenty of honey and a restricted brood-nest, I felt it safe to leave the bees alone for several months in Durfee Canyon.

Early in April I received a letter from Mr. Levering, wherein he gave a glowing description of the country, and he closed his letter with the following refreshing sentence: "It is now raining; let her rip." It had been so long since I had seen even the indications of rain that I was in haste to get to the north.

Although in a hurry to get north I thought it best to drop all thoughts of bee culture, and spend one day with an old friend and fellow-townsman, one of my old schoolmates—yes, two of them, for his wife was a fellow-townsgirl too, and we all went to school together. It had been nearly twenty years since I had last met Theodore Reynolds and his wife Jane; and, learning that they lived in Dos Palos, a town directly on my route, it would take a hard-hearted person indeed to pass them by, and I dropped off the train a little past midnight on April 6th. Dos Palos is on the West Side S. P. R. R., in Merced Co., and about half way between Los Angeles and San Francisco, or 150 miles from the latter, and in the great San Joaquin Valley. In passing from the depot to the only hotel, the moonlight view of the town was not flattering. There were but few houses, the country looked dry and poor, and I mentally pitied friend Theodore for living in such a place. When I entered the hotel the only live occupant was a kerosene-lamp. It flickered a sort of welcome as I closed the door, and, finding nothing else to amuse myself with, I rapped on the table.

"Hello! who's there?" came in a dreamland voice from an inner room.

"It's myself," said I, "and I want a bed."

"Have you matches?" said the dreamland voice.

"I have," said I.

"Then," said the voice, "take yourself up stairs, find room No. 12, and go to bed."

"Shall I register on the table here?" said I.

"Register be h-a-n-g-e-d!" and my invisible voice had drifted back to dreamland.

My morning impressions of Dos Palos were not so favorable as the moonlight impression, and again I had a pitying feeling for my old neighbor and friend. After the hotel man had finished dealing out drinks at the bar (not to the Rambler, mind you) I inquired for the whereabouts of Mr. Theodore Reynolds.

"Oh, yes!" said the man; "Mr. Reynolds lives over in the colony;" and, pointing across the plain, called my attention to a long stretch of green trees extending miles up and down. "You see that red roofed building through the trees? That is a new schoolhouse. Mr. Reynolds lives near it. It is two miles out there."

Those green trees gave me assurance that I should find my friend in better circumstances than I had feared, and I trudged over the two miles with a lighter heart. Before I had covered the two miles I knew that good people lived there, for every one, old or young, had a bow and a smile for the stranger who was approaching their town. It was an agreeable change from what I had been used to in Los Angeles, where every one rushes past you as though you were of no more account than a hitching-post.

Here by the schoolhouse I met my last man, who pointed out the residence of my old friend. It was embowered in fruit and other trees, and flowers filled the ample space in front of the house; all betokened prosperity. I confess that my heart beat a little faster as I approached.

Twenty years and their changes! would they know me? and were they their former good selves? "Yes," I almost shouted, as a woman came to the door. "That is Jane, just as natural as ever; and her first exclamation, "Why, Johnnie Rambler, as I live! how do you do?" Then Theodore came limping from an inner room. He too gave me a cordial greeting. He had several twists of rheumatism corked up in his leg, but it did not diminish the old friendship a particle. We all got aboard a train of conversation that night, and did not get off and to bed until after midnight.

Mr. Reynolds came out here from Nebraska some seven years ago with a company of people from that State, to found this colony. I did not expect to find any thing of interest to bee-keepers here, so was agreeably surprised to find that I had stumbled into quite a good bee locality, and that my friend had quite an apiary. He had been interested in bees about as long as I had; in fact, we once bought all the bees a neighbor had, away back in New York, and divided them between us. That was years ago; but the memory of it still lingered, and here he was again dabbling with bees.

I asked my friend how many colonies he had, and he guessed he had about sixty. "But," said he, "I'll count them to be sure."

Out through the peach-orchard, along the irrigating-ditch, back of the hen-house, and in various other places, and he reported that he guessed there were sixty-five of them. I concluded that my friend had too many irons in the fire, as the old saying has it, and was allowing the bee-iron to burn, and he agreed with me, and then and there he made me such an offer on a bee-trade that I was sorry I had agreed to go further north; but my promise was made, and north I must go. At my visit in the first week in April the bees were swarming, and all new swarms were being put into new Dovetailed hives, and I had the pleasure of helping hive a few swarms, and to show my friend how to transfer colonies from box hives. I am quite sure that he will work into a first-class bee-keeper if he devotes more time to his bees and less to his ranch. When he came to the colony he performed just as they do in Nebraska—wanted land, and bought forty acres. Owing to the fertility of soil here, that was twenty acres too much, and the care of it keeps the family busy all the time.

The most extensive bee-keeper in the colony is Mr. Burr Ray, who has an apiary of 200 colonies. In 1897 he produced from 160 colonies 12 tons of honey. I found his apiary not a particle more orderly than many I had seen in the southern portion of the State; but he gets a good crop of honey every year. Instead of sending it to commission houses, he spends several months on the road, and disposes of his honey to all who are disposed to be sweetened. In this way he gets a fair price for his honey

Bee-keepers further south had heard of this little paradise, and the Flory Bros. had moved a large apiary to within two miles of Mr. Ray. I do not know whether Mr. Ray was at all anxious about it or not; but it would be no more than human for him to look a little jealously that way sometimes. There are a few other bee-keepers in the colony, and I have no doubt their apiaries will grow, and the field be well stocked.

Mr. Steele, a near neighbor of my friend, had a small apiary, and I was pleased to note that he had the bees in Heddon hives. He brought them with the bees all the way from Nebraska; but in his case, as well as with friend Reynolds, he had more irons than he could attend to, and the bees were not in that first class condition they should have been.

The source of honey in this colony is alfalfa. There is a great abundance of water for irrigation. It is brought from the San Joaquin River in a large canal 25 miles in length, and the water never fails.

Besides alfalfa there is other honey-producing flora, and my friend pointed out a little white blossom upon a running vine that was locally known as carpet-grass, which produced a fine quality of honey.

The colony contains twelve square miles, and it adjoins the great Miller ranch, which contains the generous area of 180,000 acres.

I was favorably impressed with the prosperity of the colony; and should I mention the extent of the crops of alfalfa and barley that are produced here I fear some of my eastern friends would think I was drawing on my imagination. The leading fruits on my friend's ranch are peaches and prunes; but, besides the above, he was growing apricots, pears, plums, nectarines, apples, grapes, cherries, quinces, oranges, lemons, olives, persimmons, figs, all varieties of berries; and of nuts, the almond, walnuts, and the chestnut. Dos Palos certainly presents many features favorable to the home-seeker.

While my friend was driving me around the colony there was a demonstration that the ladies here are of the energetic order. A young blacksmith had fallen in love with one of the fair maidens, and had induced her to leave the parental roof. The mother was indignant, as she had a right to be, and proceeded to the shop, with a whip, and gave the young man a sound thrashing. The irate woman supplemented her exercise by attending a revival service which was in progress in the church, and taking part in the proceedings.

When I stopped with my friend I had an idea of staying but one day; but two passed before I could get away. The memory of meeting an old friend, and the finding of another bee-keeper's paradise, will linger long in the chambers of the memory.

ABOUT CLOVERS.

Crimson Clover, Alsike Clover, Sweet Clover, Etc.

BY THADDEUS SMITH.

I have been familiar with growing red clover from my youth up. I have raised alsike clover a number of years, and found it quite satisfactory, making a better hay, in my opinion, than red clover, though not so much per acre, and probably not of as great benefit to the land. In sowing clover for hay now I would always mix alsike with it. I have had four years' experience in sowing crimson-clover seed, and, as with hundreds of others, it has been very unsatisfactory. The first year's sowing was a failure to get a stand. The second year was like the first. I sowed at different times and under different circumstances, and yet in these two years I did not see a dozen matured clover-plants. The third year I got a partial stand — very scattering on most of the ground. It was well protected by snow in the winter, and came through all right. When in bloom it was a very pretty sight where thickest. I plowed some of it under, saved some seed from the best, and let the other go. The fourth sowing was made last July in several different places, and as the weather was very favorable I got a good stand. It came through last winter fairly well, some of it being killed where the snow was blown off, and some where the ground was wet; but none of it made any extra good growth.

The puffs given crimson clover in the last few years by newspapers and newspaper correspondents of some of the Eastern States who were raising crimson-clover seed for sale have induced the farmers of the country to spend thousands of dollars for seed that has never brought them one dollar in return. I have a friend in Kentucky — a large farmer in the blue-grass region of that State—who sowed 50 acres at one time in his cornfields, and it was a complete failure. A friend on a neighboring island—one of the most progressive and successful fruit-growers in Ohio — was led to expect great things to result from sowing crimson clover in his orchards and vineyards. He bought seed, and sowed for two or three years ; but, failing every time, he gave it up in disgust. Hundreds of others have had the same experience. I have been more persevering than many others, but it has been nothing but an outlay.

A. I. Root succeeds well with crimson clover on his rich, highly manured, thoroughly *underdrained* land, when it is sufficiently covered with snow the coldest weather to keep it from being killed ; and others who have been succesful tell us about enriching the land with fertilizers before sowing; and I think that these facts give the key to the principal cause of so many failures. Crimson clover will not succeed on thin or moderately poor land. We usually sow clover to *improve* land — to restore its fertility. I have never worked land that ever got too poor to raise a fair crop of red clover, and that could not be recuperated and brought back to fertility by sowing red clover and a proper rotation of crops, without manuring or using other fertilizers. I now have land that produces better crops than it did forty years ago, that has never been manured.

So far as I can see or learn, crimson clover has no advantage over red or alsike clover as a general farm crop. It is more difficult to get a stand of it. It is more liable to be killed in winter. It does not make as good hay. It is admitted that the hay has proven to be injurious to horses — sometimes kills them. It is no better as a nitrogen-collector or fertilizer. Its main value is as a kind of catch crop, to be sown after the removal of some early crop, on the rich land of the intensive cultivator or gardener, and plowed under the next spring to give more humus and nitrogen to the soil. But may not red clover be plowed under with as good effect? Who has tried sowing red clover in July or August as a catch crop? I sowed some last June, and it is doing well. I know that it does not mature or bloom as early as the crimson; but it may make as much humus and nitrogen. Last spring I had some crimson growing alongside of a piece of red clover, and the crimson was in bloom some ten days before the red, but at the same time the red was from three to four inches the taller, and it would have made a much larger mass of tops and roots to plow under at the time the crimson came into bloom. The seed-sellers have been the only ones who have made the growing of crimson clover very profitable.

Lately I have been watching and experimenting with sweet clover. It is found growing here along the lake shore in the rocks and gravel, as well as upon good soil on the roadsides; and when I read A. I. Root's statement that, in all his travels through the country, he had never seen where sweet clover had spread from the roadsides into adjoining fields and pastures, I was very much surprised; for on a road along the lake shore, only three miles from my house, I had often seen where this clover had extended some distance into a pasture. After reading A. I. R.'s statement I made a special visit to this neighbor to investigate. I found a pasture covered with it for a distance of 100 yards from the road, and it was nearly as tall as my head (I am over six feet high). I found some growing in his vineyard and in a corn-patch. I asked this neighbor why he had not fed it to his stock, or pastured it. He said he had cut it for his horses, and gave it to them green and as dry hay; that he had turned his cows upon it, but stock would not eat it. I noticed on the road, in front of him, that cattle had been running at large on the road, and had eaten the grass down close to the ground, but the clover was almost untouched. I proposed to this friend that he save the seed and try to make something out of it — that I wanted some seed myself, and that I thought I could find a market for all he could save; he could cut it with his mower, and run it through the wheat-thrasher. He made an attempt to save some seed by cutting it with a scythe, and thrashing by hand, but this, of course, he found hard and slow work, and he quit and brought me only half a bushel of seed, for which I paid him $1.50.

At another neighbor's, only half a mile distant, I saw that sweet clover was spreading into his front dooryard; and last spring I interviewed him, just in the act of mowing it. He said that he was feeding it to his horses in the stable; and as they had been confined all spring without any thing green they ate it quite readily. It was then in its young and tender stage. He had tied his cows out on the roadside in front of him, where they had kept the clover pretty well trimmed down, but he said it would be worth $50 to him if the stuff had never got on his place. This was rather discouraging to one who had been sowing the "stuff" on his place; but I knew that these neighbors had not made any thorough attempt to keep the clover down. My neighbors laugh at me, and say that I can never get rid of it; but I am not alarmed, and intend to experiment a little.

Just after the frost was out of the ground I gathered some of the roots of the three kinds of clover to compare their root systems. I was surprised at the immense roots of the sweet clover, both as to their size and length; for, although I knew before that it had big roots, I had never tried to get the whole root. Were I to say that one root of the sweet clover would weigh from 20 to 25 times as much as one of the crimson, I think I should be in bounds. I estimated that, on an average, the red clover had about twice the weight of roots of the crimson, though I had no means of weighing them accurately. I found the so-called nitrogen-bearing nodules on all the roots, but apparently less upon the sweet than upon the others. I have sent specimens to our Ontario Agricultural College for examination and report of the specialist professor.

I have an idea that this sweet clover, with its tremendous roots and large and early growing tops, may prove to be a very valuable thing to plow under, to furnish humus, nitrogen, and other fertilizers to the soil. We shall see. I expect to plow mine under before it seeds, even before it blooms for the benefit of the bees, and I don't think that I shall have any trouble keeping it within bounds.

Pelee Island, Ont.

[Friend S., I am very glad indeed to get your fair and honest opinion in regard to the clovers; but I think you are a little severe on crimson clover, and on those who have sold the seed. I read over twice all you have to say, to see if you did not somewhere suggest that your failure, and the failure of others you mention, might be because you were too far north. If I am correct, several parties have tried sowing red clover among corn, or where early potatoes came off, exactly as we do the crimson ; and, if I am correct, the crimson was not only earlier, but it stood freezing and thawing better. Many of our agricultural editors have cautioned their readers not to expect crimson clover to be a profitable crop further north than, say, the southern part of Ohio This may be true; yet there are a great many who are succeeding as we are, year after year. Having the ground thoroughly underdrained, and rich in fertility, has much to do with it, no doubt. I can hardly understand why horses and cows should refuse to eat sweet clover. I find cows, wherever I go, eating it greedily whenever they have access to it.

Now, your friend who gave the green clover to his horses before they had had a chance at any other green feed, will find, I think, that these horses ever afterward will take sweet clover before any other kind, and, in fact, almost before any thing else. It is possible the cows you mention would have to be taught something in the same way; but when they once get a liking for it, it will last them for ever. I wish some of you would try keeping cows away from green feed in the spring, until they are hungry for it, and in this manner get them started on sweet clover.

I confess I feel a little impatient with the farmer who says he would give fifty dollars to have the sweet clover off his land, or makes such expressions. Let me say to all such, sweet clover is not a weed, but a *clover*, and one of the most valuable clovers to plow under. What farmer would complain to see a rank growth of red clover on his soil, even if his cows or horses would *not* eat it? Every one who grows crops knows that a heavy growth of clover is worth as much as a good coating of manure, and sometimes more. If it is on the roadsides, then plow up the roadsides, and raise crops of any thing you want. If it is in your fields, plow it under and grow a crop. It surely is not at all difficult to get rid of. It grows on the railroad grounds, close to my potato-patch, year after year. It makes a great rank green growth earlier in the spring than any other crop; and it bears great quantities of seeds that drop right down in my cultivated ground, where I grow potatoes and other things. Lots of weeds of different kinds come up among our potatoes; but sweet clover, never. It is a kind of plant that will not grow where the land is cultivated and stirred as it ought to be for good farming. In this respect it is entirely unlike the most of weeds that trouble farmers. I am glad to know, friend S., that you are getting faith in sweet clover, even if you are not getting it in crimson clover.—A. I. R.]

BEE-FEEDERS AND FEEDING.

Dearth in Southern California more Complete and Prolonged than for Fifty Years; Feeding with the Hill Feeder.

BY J. M. HAMBAUGH.

The sparse showers and light rainfall of the past winter in Southern California have played havoc with the bee-keepers' prospects for the season, and the contemplated financial benefits to be derived from the pursuit have resolved themselves into deferred payments of indefinite promise; and the poor little "busy workers" have long since realized that it is a case of the "survival of the fittest;" and where no attention has been paid to their needs and wants many have long since succumbed to the inevitable, and the wary moth-miller has invaded the precincts, and the once beautiful combs are an unsightly mass of webs, worms, and cocoons. Yes, thousands of colonies of bees have died, and thousands more are bound to die, where judicious feeding has not been practiced; and the prudent and successful bee-keeper is he who is in full sympathy with their poverty, fully realizing their needs, and is armed with the necessary appliances whereby to feed and nourish them through the season of failure from Mother Earth to meet their requirements.

From what we can learn from old Californians, this has been an unusually hard season for the bees in Southern California, the dearth being more complete and prolonged than any during a period of 50 years. This we can not verify from our own experience, as our sojourn is of but three years' duration; but we do realize that it is not all plain sailing to the average honey-producers of this section of the country.

One source of consolation is that no two successive years of failure ever occur, according to the statement of our apiarian predecessors; and, this being the case, with the assurance of a wondrous yield should normal conditions once more come around, it behooves the bee-keepers to see that loss of bees is reduced to the minimum; and now the subject of feeders and feed is the all-important one to the bee-keeper.

In our experience we have always advocated the feeding of pure liquid honey. If the honey should be thick and heavy, dilute it with water slightly, but not sufficiently to make it watery and thin. The cheapest grades are as good as any here in California. In the event that honey can not be had, a syrup can be made of sugar of any grade by mixing water and bringing it to a gradual heat, stirring it meanwhile. The proportion is about two-thirds sugar to one-third water.

As to the subject of feeders, some do not use any of any kind. They simply tilt the hive backward so that the honey will not run out at the entrance, and pour the honey over the combs in limited quantities, and let the bees clean up their house and make their toilet as best they can. We do not advocate this untidy way, realizing from experience that it is not only untidy but a dangerous method where many bees are kept in a body; neither do we believe in outside feeding, as it is a bait and a free fight for all within a radius of three miles, which will not pay the bee-keeper, besides the danger of getting up a wholesale robbing-fever, in the event of which it at times becomes extremely difficult to control, especially for the novice; and the feeder that will obviate this difficulty, and give it to the bees at home, as it is needed, without danger of outside interference, is what the bee-keeper wants. The most satisfactory in our experience has been the Hill feeder, which is made like a fruit-can with a sunken lid perforated with fine holes. You simply fill, or partially fill, one can, according to the strength of the colony, put on the lid, and invert it over the brood-nest. An upper body is, of course, necessary. In the event of having a very populous colony, two or three cans may be used in the same body. Quart cans are preferable.

We have used successfully the Mason self-sealers and tin fruit-cans as feeders, by perforating a piece of tin full of fine holes. Spread first a small piece of gunny sacking over the mouth of the filled can or jar, then place the perforated tin on the sacking; invert over the brood-nest. This is an economical plan; and where the apiary is small it is a very safe and desirable method; but where much feeding is needed, the first-mentioned method is preferable. Care and judgment must at all times be used, and the feeding done late in the afternoon or evening. The cans can be taken from the hives, and refilled under shelter from the bees, and placed back in the hive, with no smell, which is so essential in a bee-yard during a honey-dearth. A neighbor bee-keeper with 300 or 400 colonies feeds at any time during the day, he says, with safety, with the Hill feeder.

Escondido, Cal.

* * *

SHADE FOR BEES IN FLORIDA.

Honey Making People Sick.

BY MRS. L. HARRISON.

Mr. Root:—I regret very much my inability to meet with you all at the late reunion of bee-keepers at Omaha; but circumstances beyond my control prevented. However, it's a panacea to hear the talks around the campfires, even if it is second hand. I've listened with great interest to the discussions about "honey making people sick," and it rightfully demands a day in court to prove its innocence.

Before we engaged in bee culture, an old farmer friend "tuk up a gum," as he expressed it, and brought it to town to sell. We purchased some of it. We found that, if we ate the least amount of that honey, it invariably was followed by sickness. It was just such honey as is usually obtained from a bee-tree—old black comb, with bee-bread in abundance.

The following spring we purchased two colonies of Italian bees, and put on surplus boxes. Beautiful white-clover honey was the result.

Reading in a bee-paper that honey is an excellent remedy for a cold (and as we were thus afflicted), we procured a large piece of beautiful white-clover honey, and ate it, drinking with it some hot mint tea, and retired, expecting to hear from that honey. We did not, sleeping well all night. From that time until now, more than a score of years, all the family have been eating honey, without the least discomfort. The Creator intended *honey* as food for man, but not bee-bread, or pollen. When a bee-tree is cut down, the pollen, or bee-bread, and honey, are all mixed up together, and that is what makes people sick, and not the bees running over it with tails elevated.

FARMERS WRONGFULLY ACCUSED.

It's a mistaken idea that farmers lower the price of honey. The little they sell does not affect it. It's like the fable of a gnat on the horn of an ox. Last winter the price of honey was fair until a carload was consigned to a commission house from California. This honey was pushed upon the market—had to be sold to get it out of the way. The more a customer would take, the lower the price. Honey had been bringing 12½ cts. per lb. Dealers could then buy it for 8 to 10 cts. per pound. We are never out of honey, good seasons or poor. People know that our honey-house has a supply.

CRAYCRAFT'S BEE-SHED.

I've taken much comfort in looking at the picture of Mr. Craycraft's bee-shed, Astor Park, Florida, as he looks so restful sitting on a stool by his hives, with a chinaberry-tree near him. I should like to take a walk with him between the rows of hives, and then on the outside in the sunshine, any time from November until April or May, and ask him where he felt the best. I never saw a place where there is so much difference in sunshine and shade as in Florida. The rooms on the sunny side of our house are genial and warm, without fire, while on the shady side they would be uncomfortably cool.

While visiting the apiaries of the firm of Alderman & Roberts, the largest in the State, at that time consisting of 1300 colonies, I was walking around one of the apiaries in company with Mr. Roberts, when he said, pointing to a grove of jack-oaks, "When swarms clustered on those trees I hived them, and, being very busy, I left them there. They have done much better than those under the sheds. When I get the ground grubbed out I am going to put more bees there."

I should like to have Mr. Craycraft keep a few colonies in the sunshine during the winter, and note in the spring if they are not more populous than those in the shed.

It would be well for all who care for bees or other animals to put ourselves in their place, and consider in what way we should be most comfortable, and in what way we might accomplish the most work. Bees in Florida work all winter, and rear brood. If they are in the warm sunshine they can work more hours than in the shade. It appears to the writer that under the shade of a scuppernong grapevine would be a good place for bees. A resident remarked that this vine should be named "Good Sense," for it never leaves out until all danger from frost is passed. This vine could be trained to run up so that a person could work comfortably under it, and its nature, is to spread out flat. Colonies would swarm before it leaves out, and then, during hot weather, be in dense shade. The boards of the shed-roofs yield no fruit; but the vines would yield delicious grapes. Thus the ground would be a producer of both honey and fruit.

Peoria, Ill.

* * *

SNAP SHOTS.

A Bit of Experience.

BY SIDNEY K. CLAPP.

Mr. Root:—My reading has been wide and varied in apiculture; but, supplemented by GLEANINGS, my experience, and that offered by others, it has become one of real pleasure and profit. I inclose a little group of photos that will show to some extent my interest.

No. 1 shows my experimental apiary containing eleven hives in winter quarters under large fruit-trees, sheltered by a high boxwood hedge to the northwest, giving the hives an exposure to the southeast. Other hives extend right and left.

Photo No. 3 will show the grading of my surplus. The first four boxes to the right I call No. 1, and the four to the left No. 2; and then, again, I might divide each group into two others. I have found it far more profitable to sell only No. 1 at a good price, and distribute gratis the second grade, or use it at home. The two boxes at the left, while capped evenly, contain dark honey, and are travel-stained.

Photo No. 2 shows a type of frames used. One, marked "old method," was made entirely by the bees with no starters (contains 30 per cent of drone comb). The one marked "new method," built at the side of the first, was from a full-wired foundation, and contains not one drone-cell. Both were used for the whole season in the same hive.

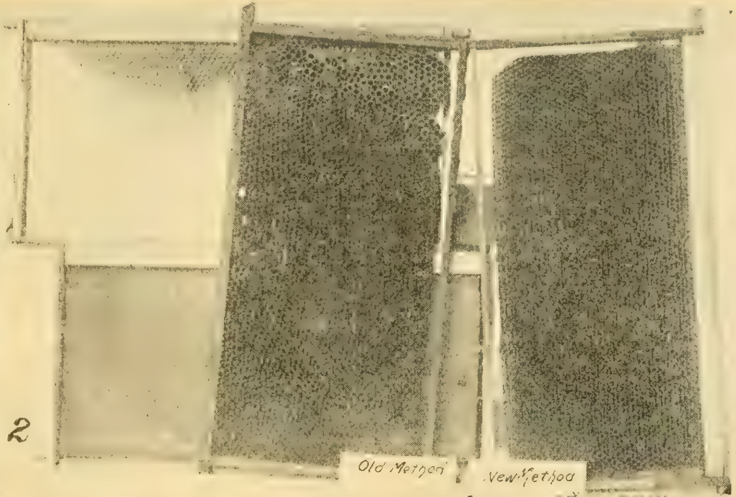
Photo No. 4 shows a group of drone and queen traps of my special construction.

On page 888, 1897, Mr. Doolittle speaks of submitting our mites for the good of all. Allow me to suggest a remedy for the fear of burning from a smoker hanging by a hook, as suggested on p. 889. I have found it a great advantage, in more ways than one, to have my smoker-barrel covered with a sheet of asbestos paper; then if, in a hurry, your fingers touch the hot barrel, you do not receive worse than twenty stings in a bad burn, and perhaps upset your plans besides. The asbestos paper is held snugly around the barrel by means of copper wires.

South Boston, Mass.

[We did use asbestos for a couple of years as a lining for a smoker barrel; but later found that a supplementary cylinder or shield with air space was lighter and better.—ED.]

1

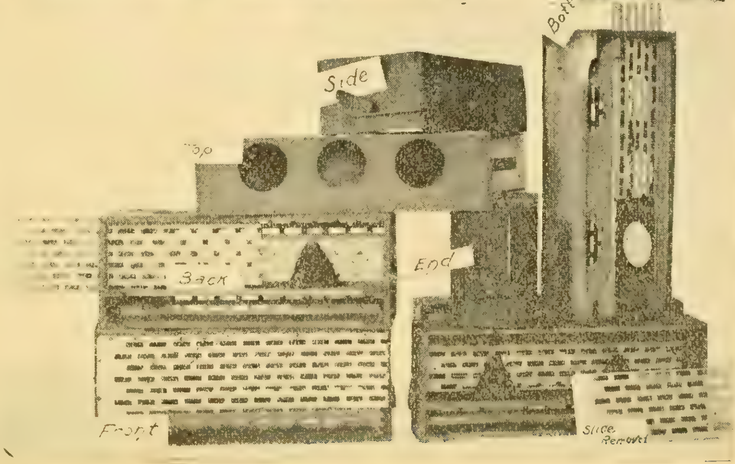


2

Old Method
New Method

3

HONEY
HONEY



4

Bott
Side
Top
End
Back
Front
Slide Removed

SIDNEY K. CLAPP'S BEE-KEEPING ILLUSTRATED.

CONVENTION OF THE SOUTHWESTERN WISCONSIN BEE-KEEPERS' ASSOCIATION.

The Good Work Done by the Foul-brood Inspector.

BY HARRY LATHROP.

The above association, of which Mr. N. E. France, our untiring foul-brood inspector, is president, met at Lone Rock, Wis., Oct. 5th and 6th. This place, being on the Wisconsin River, at the outlet of the Richland Co. country, and within easy reach of the great basswood regions on the Kickapoo, where there are many bee-keepers, a large attendance was expected; but in this the few faithful ones were disappointed. Those who attended had a very pleasant time. The local bee-man, Mr. F. Z. Dexter, made it as pleasant as possible for us. A hall free of charge was provided for the meeting, and a lady choir came in and treated us to some splendid vocal music.

One notable attraction at this convention was the photographs of various apiaries and buildings pertaining to bee culture, which N. E. France had taken with his camera on his various trips over the State, while in the discharge of his official duties. These were placed at the end of the hall, and there were enough of them to cover several square yards of surface. The display was very instructive. Every thing was shown, from the picture of a prosperous apiary down to that of a great pile of empty hives with the inscription, "Bees all dead—results of foul brood." Mr. France, with his views, would be a winning card for any bee-keepers' convention where his attendance could be secured.

On account of the small number present, very little convention work was attempted, and at noon of the second day the meeting was adjourned. We feel like throwing something at the bee-keepers over on the Kickapoo for not taking enough interest to attend when the convention was held within easy reach of them all, and they had a good honey crop this year, too. Evidently, Wisconsin bee-keepers fail to appreciate the importance of this work.

I had the pleasure of making a brief report of the Omaha convention, and at the close several came forward and joined the United States Bee-keepers' Union.

We had the pleasure, on the second day, of the presence of Mrs. Pickard and daughter, of Richland Co. Miss Pickard has recently been spoken of in the *Amer. Bee Journal* as being "the sweetest girl in Wisconsin." Eight tons of extracted honey was the product of the outapiary which she handled without assistance. How grand to see a young woman making herself independent by her own effort, instead of (as many do) growing up as useless butterflies, flitting from one vain thing to another! The entire crop produced by the Pickards was 50,700 lbs. extracted, from about 400 colonies. The experience and advice of such successful bee-keepers are eagerly sought in conventions. Success is more than any amount of theory. The above-mentioned yield must not be taken as an indication of the general yield of the State. Mr. France estimates this year's crop in Wisconsin at one-third of that of last year, and for the whole of the United States at one-fourth. But, despite the short crop, it was stated by Mr. France that many bee keepers in the State, who had produced a few hundred or thousand pounds of honey, had sold, or offered to sell it, at prices as low as or even lower than the low price of last year. It is a well-known fact that, when farmers have butter and eggs to sell, they do not show such a lack of good business sense. They want the full market price, and they get it too.

Another convention of Wisconsin bee-keepers will be held at Madison in February, and we hope the bee-keepers will redeem themselves by a large attendance. Our foul-brood inspector has done a noble work. The disease has been stamped out over large districts; but other infected districts await the same persistent effort.

Browntown, Wis., Oct. 18.

THE PETTIT SYSTEM NOT NON-SWARMING, NO CLAIM FOR THAT, BUT AGAIN SATISFACTORY.

Large Entrances Defended; The Danzenbaker Floor a Good Thing, but may be Improved.

BY S. T. PETTIT.

I read with some surprise Mr. Doolittle's reply to Dr. Miller on page 760, where he (Mr. Doolittle) insinuates that I claim my system of taking comb honey is a non-swarming one. I wish to say that I do not set up any such claim. But I do claim that the large entrance, and proper distribution of the bees to the uttermost parts of the super, and holding them there by the use of dividers, so relieves the pressure in the center of the hive that it makes the bees feel cool, free, and easy—indeed, the bees feel that there is more room in the hive, and so I reason that swarming is held back for a time at least, Mr. Doolittle's three swarms to the contrary notwithstanding.

That the large entrance and wedges cause the outside sections to be beautifully finished, this season's operation has again fully demonstrated, in my yard at least; and, again, I say I have no doubt that more honey can be taken by this method than by the old way, both comb and extracted. It is no uncommon thing to find the outside combs in the extracting-supers better finished than the center ones.

The Danzenbaker floor is a good one, but I believe that, if you would lower the rear end of the hive to something like half an inch by making the sides of the floor wedge-shaped you would like it better: then the hive would be perpendicular, and the floor would be just right to help the bees clean house and to throw the water off.

Returning to Mr. Doolittle, let me say it seems to me very unfair to test a system, and in that test leave out half of that system. He does not tell us that he used the dividers in that experiment. Is that fair and just? Mr. Doolittle seems to think that he settled nearly every thing in bee-keeping twenty-five years ago, and now he doesn't have to test any thing thoroughly and in good faith. But, of course, he must test things just enough to prove the falsity of their claims. But, for all that, I appreciate the many good things that Bro. Doolittle has from time to time told us in his writings, and no doubt there will be advancement when both he and I have finished our work.

Belmont, Ont., Can.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

STRAIGHT WORKER COMBS WITHOUT FOUNDATION.

Question.—Will you please tell us in GLEANINGS how straight worker combs can be secured without the use of comb foundation? I wish to make my frames this winter, and put them in shape for next summer's use, and I do not wish to use foundation in doing so. Knowing that you kept bees before the advent of foundation I thought you might give those who do not wish to purchase foundation for their brood-frames some light on this matter.

Answer.—To have all of our combs built true in the frames, so that each comb is as true as a board, is certainly worth working for, to those who handle their frames. The object of frame hives is to allow of a better control over the inside of the hive than could be done with box hives; and only as these frames are movable, in the fullest sense of the word, is this object secured. We often see combs so bulged or crooked in the frames that they will not allow of being changed to different parts of the hive, or from one hive to another, in which case the hive containing them can scarcely be called a movable-frame hive.

As a starting-point toward straight combs I would use a strip of foundation, half an inch wide, as a guide for the bees to follow the center to the top-bar to the frames, even did such foundation cost me two dollars a pound; for where no such guide is used it is impossible to secure the combs built true in the frames. If any person is so set against foundation that he will not use it any case, a wax guide can be put on the under side of the top-bar to the frame, which is secured by making a straight-edge of hard wood, the thickness of which is equal to half the width of the top-bar to the frame, by one inch wide, and ¼ inch shorter than the inside of the top-bar is long. This straight edge is nailed to a wide board, and the board is so fixed that it inclines enough for the melted wax (which is to be used to make the guide) to run along the top-bar freely. With a wet sponge moisten the straight-edge; lay the frame on the wide board with the under side of the top-bar pressed against the straight-edge, when a little wax is turned from a spoon into the upper edge of the V-shaped trough (which is made by the top-bar of the frame and the straight-edge), and allowed to run down the whole length of it. Now lift the frame and you have a wax-guide for the bees to start their comb on. By keeping the straight-edge wet, the wax will not stick to it; and, by using a lamp under the dish of wax, it can be so regulated that the wax is kept at the right temperature all the while. In this way guides can be put on very rapidly, but they are not nearly as good as the strips of foundation, as the latter has cells started on it, while the other is only a plain strip of wax. While I have found a guide of some kind an actual necessity (the above two being the best), I have also found that no guide can always be depended upon, for the bees are sometimes very obstinate, and will leave any guide, or gnaw the wax off, so as to build crooked combs, if they do not go directly across the frames. Consequently it pays the apiarist to look at each colony hived on empty frames, while they are building comb, as often as once in three days. If any combs are going wrong, they can be bent back in line very easily, and after the hive is once filled they are good for many years, as I have never yet seen a comb that I would discard on account of age, although I have now kept bees for nearly thirty years.

To best illustrate how to manage I will give my way of working with a swarm of bees hived in any hive having frames with only starters in them. As all of my queens have their wings clipped the swarm is hived by letting them return, previously moving the parent colony to a new location, and setting the hive containing the full number of frames in its place. In two days I open the hive, and usually find that the bees have made a start on five frames. These five frames are placed together at one side of the hive, and a dummy or division-board is placed next to them. This throws the full force of bees on these frames, and they will soon fill them with straight worker-comb, as a rule, especially if sections are placed over them, as they always should be, so that, if much honey is coming in, it may be stored in the sections rather than be an incentive for the bees to build drone comb in which to store it. This also gets the bees to work in the sections quicker than any other way I know of. If we get these five combs built straight there will be no trouble in having the rest so, as they can build them no other way if placed between two of those already built. If every comb in a hive is straight and all worker, other conditions being equal, such a colony will be a profitable one; and if each colony is in like condition, all will be profitable. No bee-keeper, even if he has not more than three or four colonies, should consider them in proper working condition until each comb is a straight worker comb. There is no need of having hives half full of drone comb, and so crooked that they can not be handled. If we do things at the right time and in a proper manner, our bees will more than pay us for all of the time spent on them.

Suppose that, instead of working as above, we hive our swarms without paying any further attention to them. Swarms issuing when honey is very abundant will build comb very rapidly, filling their hive in eight or ten days, thereby building comb in advance of the queen, in which case their comb will be apt to be crooked, and at least one-third drone or store comb which is good for nothing for rearing worker bees the next season, but an actual damage, as the drones reared in them will consume a great part of what honey the workers gather. Such colonies will always be unprofitable ones, either for rearing bees or storing honey, just so long as left in that condition; and, if unprofitable, the bees will be neglected more and more, and the keeping of bees be declared by the owner as a "delusion and a snare," while had their keeper attended to them while they were building combs, and then given them the attention needed afterward, success would have crowned the effort, and bee-keeping would have been declared one of the nicest and most profitable pursuits in the world. Any business is profitable only as we put our thought and energy into it, bee-keeping being no exception to this rule.

HEADS OF GRAIN FROM DIFFERENT FIELDS

ANOTHER VICTORY FOR THE NATIONAL UNION.

Mr. J. C. Kubias, of Redlands, Cal., has been sued by W. F. Whittier for damages, and he prays for an injunction restraining Mr. Kubias from keeping bees within one mile of his land, claiming that the bees befoul the water used for irrigating and domestic purposes, and also sting men who work in the fields adjoining the apiary. Mr. Kubias' apiary was located there before Mr. Whittier planted his orchard, and should have prior right to the location—if there is to be any preference.

The National Bee-keepers' Union assisted the defendant with "points of law," and money to defray the expenses of a lawsuit. When it was known that the Union was interested in the defense, the plaintiffs weakened and bought out the defendant's homestead. Mr. Kubias returned the money to the Union, and wrote thus:

> Whittier acknowledges, through his attorneys, the correctness of our position, and bought my rights to the homestead entry on which my bees are located. The fact that the National Bee-keepers' Union was back of me was the most potent factor in not allowing the case to come to trial. J. C. KUBIAS.

As soon as the enemies of the pursuit of bee-keeping understand that the National Bee-keepers' Union is interested in the defense, they generally waste no time in trying to settle the matter by compromise or letting it drop entirely. This shows the value of organization, in maintaining their rights and demanding their privileges. "In union there is strength." Bee-keepers should remember this, and lose no time in becoming members of the National Bee-keepers' Union.

THOMAS G. NEWMAN, Gen. Mgr.

THE GOLDEN HONEY; WHY SOME OF IT (P. 690) WAS DARKER.

E. R. Root:—Your footnote relating to your judgment as to the cause of so great a difference as to color of sections (comb honey), page 690, would have been a correct answer if you had put it "characteristic" instead of "difference" in bees; but I presume you meant that the same kinds of bees possess different characteristics as to the capping and building of comb; and, as I stated, I'll tell just why that third row shows up so much darker. Those three colonies are all three-banded Italians that I had to leave over from last year with unchanged queens, and the one from which No. 3 sections were taken was one of the best colonies I ever owned for storing large amounts of honey; but when capping they would just spread a thin coating of wax over the honey, and glass it over, giving it a greasy appearance; besides, one could scarcely handle the combs, being so fragile—brood-cappings having a good deal the same appearance. When offering this section honey in the market, inquirers wanted to know if a coat of paint had been put on the honey. So you can readily solve the question.

Sections in No. 3 contain the same kind of honey as 1 and 2; but the cappings being smeared right on the honey, it shows badly; and had the honey been light you could hardly have told where the cell-cup walls were; therefore a $5.00 breeder reigns in her stead.

But, Ernest, there is no doubt in my mind that the open separators have much to do in more quickly curing honey. This is one of the essential features of my method which, if you will take time to consider for a few minutes, you will see afford a free ventilation throughout the entire combination hive. This undoubtedly hastens evaporation, as all will admit; but I have noted down in my diary to fully and properly test the three separators in the one hive next season.

Reinersville, O. J. A. GOLDEN.

[This should be taken in connection with what is said on page 806.—ED.]

BEE-SPACE BETWEEN COMB SURFACES, AND HOW IT VARIES WITH DIFFERENT KINDS OF BEES.

Mr. Root:—I notice the disagreement going on in your paper as to the width of space between well-filled sections, and that you call for the opinion of honey-producers as to what they know about it.

Now, I believe all are correct in the measurements they have given, as every one has, no doubt, been accurate as his bees did the work.

Bees are not all of a size. The blacks differ in size as well as the Italians.

In this locality there is a small black bee that does not leave a space between the sections more than two-thirds as wide as some of the Italians. Then there is the brown bee, fully as large as the common Italian, and yet it is called the black bee, and the space between the combs they leave is substantially the same as with the Italians.

The five-banded bee, the Duval strain, is the largest bee I have ever seen, and the space between the combs they build is much wider than the common Italian or the black.

I have never been able to note any difference in the width of space between sections built by Punics or Carniolans or black bees. I believe every man has been honest and accurate in his measurement of space between sections as his own bees left the space.

IRA BARBER.

De Kalb Junction, N. Y., Oct. 12.

HOW TO LIQUEFY HONEY CANDIED IN GLASS.

I have not as yet seen any thing in GLEANINGS about liquefying honey by placing it in the oven of a common cook-stove. I have done this for the past three years instead of placing it in a basin of water on top of the stove, and I can assure you it is far superior to the latter. Some might think there is more risk of breaking the glass when honey is in glass packages; but that is not the case, as I have broken some by placing them in water on top of the stove, but have not as yet broken a single one by placing them in the oven. It is not necessary to place them (tumblers I mean) in water.

My method is to take a shipping-case and place the tumblers in, or other glass packages, whatever the honey may be in. Place them in the oven, close the door, and in ten to thirty minutes your honey is liquid again, and that, too, without even so much as spoiling the labels. The hot air does not seem to act on the glass as does hot water, and still is more rapid. I have liquefied hundreds of tumblers of honey, and know whereof I speak.

Bellevue, O. H. G. QUIRIN.

[Your method will do nicely in a small way.—ED.]

HOW BEES DISLIKE BLACK; CANDIED HONEY IN TIN PAILS; HONEY-LEAFLETS FOR SELLING HONEY NOT A SUCCESS.

From what I read in GLEANINGS you think bees do not object to dark colors. If you will turn a hen with a dozen newly hatched chickens, while they are downy, eleven white and one black one in the lot, if the black one does not get more stings than the others, I will pay for the use of the hen to hatch the chickens. My chicks run in my bee-yard. The black ones are screaming from stings continually, but a white one is hardly ever stung. The young man who helped me this summer with my bees wore light-colored pants when he commenced work, and got no stings through his pants; but he wore dark pants one day, and the bees punished his legs so he was glad to put on light trousers again. If you want to prove to your own satisfaction that bees don't like black, wear a black or dark-brown cardigan jacket, with the sleeves turned down around your wrists, or tie a strip of dark woolen cloth around your wrists one day while working among your bees, and I think you will get more stings on your wrists at the edge of the dark cloth than you ever did in one day before. They serve me that way, and I have Root stock in my yard.

I have learned that, in peddling honey, I can sell candied honey in tin pails to people who will not touch it if in glass jars.

I have had of you 2500 of the honey-leaflets, and have handed most of them out to customers and acquaintances and others. I don't think they have sold a pound of honey for me, or helped my trade in any way. I can not learn of a single person who has used any of the recipes for baking or cooking, and only two have said they would try them. I should like to know what the experience of other bee-keepers has been in the use of the leaflets.

E. D. HOWELL.

New Hampton, N. Y., Sept. 27.

[On page 661 you will note I acknowledge that, in view of the evidence that has been pouring in, to the effect that bees dislike black, Dr. Miller was right and I wrong, although I have received one report from one who says he could not discover that bees have any more antipathy toward one than the other color.

As to those honey-leaflets, your experience seems to be quite the opposite of that of many others. However, we should like to hear from others. Let us know positively whether the distribution of leaflets of this sort does accomplish the result sought.—ED.]

HEARTSEASE HONEY; CLEATS ON HIVES.

Heartsease gave us a good yield in this locality during the latter part of August and the whole of September. It has failed us so often in the past few years that few of us were prepared, myself among the number, and did not get the surplus arrangements on in time. We put on second stories with brood-frames in them. Some of my best colonies filled their second stories full, and commenced on a second lot, but did not finish them; in fact, all colonies did that did not swarm. Heartsease is the "bacon and beans" of all honey for my family. We can eat it the year round, and never tire of it. When heartsease fails I buy a 60-pound can of extracted, either white clover or alfalfa. It seems "awful nice" at first, but we soon grow tired of it, and long for the old standby, heartsease. I often wonder if this is the way we have been raised, or is it our peculiar taste?

I want no more eight-frame hives. They are too small, and do not give as good results as larger hives in this locality. I want cleats on my hives, by all means, instead of handholes.

M. F. TATMAN.

Rossville, Kan., Oct. 6.

SMALL HIVES FOR COMB HONEY.

I notice in GLEANINGS a series of articles on large hives. I should like to give my experience with them. I believe the Dadants work for extracted honey only; but for comb honey I want the Simplicity with seven frames and two dummies for the brood-nest. Let me tell you what I have done with this size. I have, in the very poor season just past, secured 80 lbs. of comb honey from one colony, and no swarm, while some of the twenty-frame (two-story) colonies were swarming whenever it was not raining. I need not tell you how much surplus I got from these hives. I have been keeping bees about twelve years, and have never had a queen that would fill ten frames with eggs; so, what are these two or three extra frames for? I should like to tell you how I work my bees for comb honey; but some one would say, "That was tried and discarded years ago, when they had kings in the bee-gums."

G. H. MILLER.

Bluffton, Mo., Oct. 13.

[Never mind, friend M. Send on your method; and if it is not too ancient we will give it to our readers.—ED.]

HOW TO STOP ROBBING WITH PERFORATED ZINC.

I have been keeping from 50 to 175 colonies for the last seven years, and I don't think my method of stopping robbing failed once where the colony was of any account. Place a strip of excluder zinc in front of the entrance, and close to a one-bee space if necessary. In seven years I have had one crop failure (1897), and 1898 is a half-crop. The other five years have averaged about 50 lbs. surplus per colony.

S. LINDERSMITH.

Faribault, Minn., Oct. 4.

[This method has been before proposed, and I think it worked successfully.—ED.]

THE FENCE AND PLAIN SECTION COME TO STAY.

I have just taken off a few of the plain sections (with fences), and I have this to say about them. Most of the sections are well filled. A few were attached to the fences by burr-combs — not more than with the plain separator, however. I think the fence and plain section have come to stay.

WM. H. EAGERTY.

Cuba, Kan., Sept. 29.

BEGINNERS' QUESTION BOX BY E. R. ROOT

E. S. H., Ind.—We use planer-shavings as packing for bees, although any clean good dry chaff or dry leaves might do just as well. We use planer-shavings because they are more available for us but wheat chaff might be more easily obtained by you.

J. S., Mich.—Certainly bees can be kept profitably in Cuba, and have been for years. The statement that it is necessary for bees to pass through a cold winter as an incentive to store during summer is all bosh. In regard to the yarn concerning manufactured comb honey, just hand them one of our $1000 reward-cards.

A. S. B., Ont.—The trouble was, you allowed the bees to swarm, taking with them the old queens. The virgin queens that were left with the parent colonies went out with the after-swarms, one at a time. The consequence was, the parent colony was left depleted in strength, and queenless and broodless. After-swarming should be controlled. To accomplish this, see the methods advocated in any of the standard text-books.

J. B. K., N. H.—While not positive, I am under the impression that he who first discovers a bee-tree, and marks his initials thereon, has the first legal claim to the bees; but before he can procure them he must obtain the consent of the owner of the tree. If the owner objects to letting him take the bees, then legally they would be his, but he will be powerless to touch them. You can feed bees quite late in the season, almost clear up to freezing weather; but it is advisable to feed much earlier, in order that the syrup may become thoroughly ripened or thickened.

J. K., N. Y.—We send you our catalog, which will give you full particulars in regard to making sugar syrup and how to feed. See page 28. As to the amount of stores, we usually estimate that a colony should have at least five or six combs, or their equivalent, of sealed stores. In other words, bees should have about 25 pounds of honey or sugar syrup after it has been thickened down by them. Feeding would not be necessary if honey is stored in the second story, but I would advise taking out the empty combs above and replacing with sealed combs, perhaps leaving an empty frame in the center for the bees to cluster on.

R. E. J., Ill.—We do not advise putting sand or sawdust around hives, especially at the entrance, to keep down the weeds, for the weeds will surely grow through it. Our practice is to sprinkle about half a handful of salt in front of the entrance of all the hives. An entrance-board is very often used — that is, a board about 8 or 9 inches wide, and in length equal to the width of the hive. This board should be placed against the front of the hive. Any old cheap inch lumber will do. When going around the hive with a lawn-mower lift up the board, run the mower over the space bordering the edge of the board, and then replace the board.

F. G., N. Y.—It is not possible to remove stains from the cappings of honey. The only thing that can be done is to grade such honey as seconds, and sell for less money. The color of the wax may be dependent upon the bees, but probably more upon the locality and the age of combs at the time of rendering. New comb of the first year will be of a very light yellow, or almost white. I note that you state that your honey has yellow cappings, and that honey you see on the market is very white. It is probable that you left your honey on the hive too long; but, what is more probable, your honey is of a light amber color, and this to a certain extent affects the color of the cappings.

EDITORIAL
BY
E. R. ROOT

EIGHT extra pages this time.

DO not forget to look over our remarkably low clubbing offers given elsewhere, for we can save you money.

THE weather in our section of the country has been exceedingly disagreeable. Instead of the beautiful Indian summer which we usually have about this time, we have been having rain, rain, rain ; and this, coming at a time when we were trying to enlarge our factory, has put us back not a little.

MR. COWAN'S TERRIBLE BEREAVEMENT.

The *British Bee Journal* of Oct. 20 contains the following very sad piece of news:

> With the most profound sorrow we have to announce the sad news that Miss H. M. Cowan, the eldest daughter, and Mr. Herbert F. Cowan, the second son, of our senior editor, were passengers on board the ill-fated Atlantic Liner *Mohegan*, wrecked off the Cornish coast on Friday last, and that the lives of both were lost.

After receiving the *B. B. J.* the following from the assistant editor of the paper came to hand:

> *Dear Mr. Root:*—The obituary notice on first page of our journal for Oct. 27 renders it unnecessary for me to say any thing further here about the sad event which called it forth ; but just when leaving London for California, Mr. Cowan asked me to write you and say how much he regretted that, under the changed circumstances he would be unable to fulfill his promise to call on several bee-keepers in your country, the family going straight through from New York to Loomis. If you will, therefore, kindly make this known through your columns, I shall be much obliged. W. BROUGHTON CARR.
>
> London, Eng., Oct. 29.

I am sure that Mr. and Mrs. Cowan will have the sympathy of the bee-keeping world. It is not often that we have to record any thing so sad.

A CORRECTION.

THE stenographic report of the Omaha convention proceedings is unusually full and accurate. I have read nearly all of it, and see very few if any corrections to make. I note, however, in the *Amer. Bee Journal*, page 660, in the report of this convention, where I speak of the adulteration of honey and the difficulty of feeding bees clear glucose, the reporter makes me say this: " We are trying every year to feed pure glucose to bees. I learned this summer that you could dilute it down with water, and they would take it provided there was nothing else that was coming in." What I *meant* to say, and what I probably did say, was that we tried *one* year to feed pure glucose to bees, instead of our trying to do it *every* year. This last construction might imply that I had some sinister motive ; and after all I have said against glucosed honey and glucose in general, this would be rather a travesty on your humble servant.

I lay no blame to Bro. York, as it takes a pair of sharp eyes to catch every error that may creep through the stenographer's pencil.

FIRE AT THE HOME OF THE HONEY-BEES.

ALONG about half-past ten on the night of Saturday, Oct. 29, our big chime whistle gave forth a blast that I knew, as I hopped out of bed, meant something wrong. Going to the front door, in my night-clothes, I saw the flames leaping twenty feet over the top of one of our largest buildings. As I stumbled over chairs and other articles too numerous to mention, I yelled out to Mrs. Root to strike a light. While I was hastily putting on my clothes, it seemed to me that the whole plant would have to go in spite of us. But I had no sooner got out of the door than, presto! the flames that had been shooting up skyward were gone. As I wended my way in between the buildings I found nothing but a cloud of steam, and I heard some one yelling, " Shut off the water ! "

Our factory building is patrolled nights and Sundays by watchmen; and to make sure they do not go to sleep, an electric clock keeps track of their whereabouts throughout the whole night and day.

On the night in question, the night watchman, discovering the fire, called to one of the men sleeping in the building, and the two, in the space of two or three minutes, with the aid of the big fire-pump (always under steam pressure), fairly deluged the fire. But they had no sooner got to work than the automatic fire-extinguishers, or Grinnell sprinklers, were in active operation. The automatic electric fire-alarm was pealing forth its warning ; and when the members of the Root Co. arrived on the scene there were about a dozen men ready to lend a helping hand, but there was absolutely nothing to do.

The automatic fire-equipment is so arranged that it works mechanically, without the intervention of any human being; and, even if the night watchman should go to sleep, and the electric time-detector should stop, this silent watchman of the night, that never sleeps, stands ready, not only to put out the fire, but to ring in an alarm. We have now had it in for a period of eight or nine years; and during all that time it has not even had a chance to demonstrate its ability to put out fire.

The fire-pump itself is called a half-million-gallon-capacity machine—that is, it will throw a quantity of water equal to the average city fire-engine. As fire is kept up under the boilers night and day, the pump is ready for instant service.

BETTER GRADING AND HIGHER PRICES FOR HONEY IN PLAIN SECTIONS.

IN talking with our honey-man, Mr. A. L. Boyden, who is also secretary of the Root Co., he said several things about plain sections that I think will be of general interest to our readers. I asked him, therefore, to write a statement for print, and here it is substantiating another statement, by Byron Walker, to the same effect, that appears on p. 805 of our last issue.

As an instance of the favor with which the plain sections are meeting, and not only this, but their real value, we cite the following: We have just received a shipment of a lot of honey from a prominent bee-keeper. About a third of this was No. 1 white, and the rest was "fancy white," and in this "fancy white" we found one crate of about 200 lbs. marked "Extra Fancy, Plain Sections." Now, we do not remember any correspondence with this party in regard to the plain sections whatever. We do not even know that he is a subscriber to GLEANINGS, and in his letter he does not mention that the honey was marked in this way. He has simply marked it according to his judgment, and any one seeing the honey will say there is no mistake about it.

We have handled a good many thousand pounds of comb honey this fall; and whenever we have been able to get honey in plain sections we have found even readier sale for it than for the old style.

We sold a ton of very fine honey in old-style sections to a party in a Southern city, and this is what he writes: "The 1903-lb. lot was fine honey, but it is a pity he did not have fences." We also sold him at the same time another lot among which were a lot of plain sections; hence the comparison that he makes above.

I have just received a letter from J. E. Crane, in the same line, and from it I make an extract that will speak for itself.

> As I wrote you the other day, it seemed quite plain and certain that bees would seal honey faster the latter part of the season when between fences than when between close separators; and this is the way I came to think so. Near the close of the season I took off all finished supers, yet leaving on a large number nearly finished—i. e., the combs were well built out, but not quite full of honey, and perhaps not half sealed. Many of these had plain sections with fence, as well as old-style sections with a fence cleated with tin, like the sample I sent you.
>
> When I came to go over my hives a week or ten days later I *seemed to find a much larger proportion of those supers supplied with fence ready to come off than those without them.* After working a while I came to feel quite sure that, if I opened the top of the super, and found a fence instead of old-style separators, I should find the combs all finished, and was not often, so far as I remember, disappointed.
>
> Now, this is not a mathematical demonstration, yet we Yankees have a way of guessing that answers pretty well.
>
> I have been wondering, since I wrote you the other day, if this is not the reason that plain sections appear whiter and less travel-stained than the other sections. It seems to be the general opinion that they are whiter. The bees ripen their honey faster, and seal more promptly, which gives them a finer appearance. Of the 2000 plain sections I used this year, I believe *all* went into my best grade except ten or twelve that were unfinished, and a few that got broken.
>
> I was glad to see your frank admission of the failure of drawn or deep cell foundation; I tried it in a small way, but was myself disappointed in the result. I trust you will gain in the confidence of people more than the present financial loss. J. E. CRANE.
>
> Middlebury, Vt., Nov. 7.

Italics above are my own. On the other hand, Mr. Crane, with his usual caution, does not wish to be understood as making a positive statement regarding the plain sections.

I have an earlier letter from him on the same subject, which I hope to give in our next issue.

Regarding drawn foundation, I want the truth to come out, cost what it may. I feel the same about plain sections. If they can't stand on their merits I'll help dump them overboard.

APICULTURAL EXHIBITS AT OMAHA.

ELSEWHERE in this issue we present a general interior view of the Apicultural Building at the Omaha exposition. I have already given photos of the G. B. Lewis Co.'s and the Root Co.'s exhibits, both of which show in the general view.

The first exhibit in the foreground is that of the Leahy Mfg. Co. At the left is the Lewis Co.'s exhibit, and back of that still, as shown by the sign, is the Nebraska honey exhibit. Other exhibits are shown further down—one from L. D. Stilson, and others whose names I do not now recall. Clear to the further end of the building, just over the doorways, on a sort of balcony, are several observatory hives, with entrances through the wall. On the right are exhibits of honey from the various States; and in the very foreground, not shown in the picture, is an extensive exhibit of E. Kretchmer, a view of which I will give a little later.

This building, as will be seen, is not only large enough to accommodate all the various exhibits, but it was very artistically arranged and decorated inside.

No other exposition management has ever shown to bee-keepers the same consideration as has the Omaha; and now, having secured recognition to such an extent, we ought to be able from now on to obtain similar recognition from other exposition authorities. But in order to obtain it, it will be necessary to send such men as Whitcomb, Stilson, and Abbot — men who not only *know* what they want, but are able likewise to *obtain* what they ask for.

The list of prizes that were awarded by the judge to the various exhibitors is given below. I may be pardoned for remarking that the Root Co. carried off its full quota of gold medals, as well as other prizes.

> The following premiums were awarded in the Apiarian Department of the Trans-Mississippi at Omaha by Hon. Eugene Secor, of Forest City, Iowa:
>
> Bee Hives.—Emerson T. Abbott, St. Joseph, Mo., St. Joe hives; bronze medal. Douglas Co., Omaha, Neb., improved Langstroth hive; bronze medal. E. Kretchmer, Red Oak, Iowa; collection of bee-hives, gold medal. G. B. Lewis Co., Watertown, Wis., collection of bee-hives; gold medal. Leahy Mfg. Co., Higginsville, Mo., collection of bee-hives; silver medal. The A. I. Root Co., Medina, O., collection of hives, gold medal.
>
> Apiarian Implements and Supplies.—E. Kretchmer, Red Oak, Ia., gold medal. G. B. Lewis Co., Watertown, Wis., gold medal. Leahy Mfg. Co., Higginsville, Mo., silver medal. The A. I. Root Co., Medina, O., gold medal.
>
> Bee-books and Bee-literature.—E Kretchmer, Red Oak, Ia., honorable mention.
>
> Alsike-clover Comb Honey.—L. G. Clute, Greeley, Ia., bronze medal.
>
> Heartsease Comb Honey. — L. D. Stilson, York, Neb., silver medal. L. G. Clute, Greeley, Ia., bronze medal.
>
> Dandelion Comb Honey.—L. G. Clute, Greeley, Ia., honorable mention.
>
> Alfalfa Comb Honey.—E. Kretchmer, Red Oak, Ia., silver medal. Hon. G. W. Swink, Rocky Ford, Colo., silver medal. Lovesy & Bourk, Salt Lake City, Utah,

bronze medal. Bennett & Dieshum, Garden City, Kan., bronze medal. I. L. Dieshum, Garden City, Kan,, bronze medal.

Linden Comb Honey.—Nebraska Commission, York, Neb., silver medal. Douglas Co., Omaha, Neb., silver medal. E. Kretchmer, Red Oak, Ia., silver medal. L. G. Clute, Greeley, Ia., bronze medal.

Sweet-clover Comb Honey.—Wm. Stolly, Grand Island, Neb , silver medal.

White-clover Comb Honey.—Dr. E. C. Jaques, Crystal, Minn., silver medal D. A. Freeman, Hinckley, Minn., silver medal. Mrs. H. G. Acklin, St. Paul, silver medal. L. G. Clute, Greeley, Ia., silver medal. E. Kretchmer, Red Oak, Ia., silver medal. Lovesy & Bourk, Salt Lake City, Utah, honorable mention.

Honey in Different Stages of Granulation.—L. D. Stilson, York, Neb., honorable mention. E. Kretchmer, Red Oak, Ia., honorable mention.

Samples of Honey.—Aug. C. Davidson, Omaha, silver medal. L. D. Stilson, York, Neb., gold medal. State of Minnesota, St. Paul, silver medal.

Heartsease Extracted Honey.—Douglas Co., Omaha, silver medal L. D. Stilson, York, Neb., silver medal.

Sweet-clover Extracted Honey.—Douglas Co., Omaha, silver medal. Wm. Stolly, Grand Island, Neb., bronze medal. Nebraska Commission, York, Neb., bronze medal. E. Kretchmer, Red Oak, Ia., bronze medal.

White-clover Extracted Honey.— Lovesy & Bourk, Salt Lake City, Utah, bronze medal. G. M. Whitford, Arlington, Neb., silver medal. E. Kretchmer, Red Oak, Ia., silver medal. L. G. Clute, Greeley, Ia., silver medal. Dr. E. K. Jaques, Crystal, Minn., silver medal. J. B. Jardine, Parker, Minn., silver medal H. L. F. Witte, Minneapolis, silver medal. D. A. Freeman, Hinckley, Minn , silver medal. Mrs. H. G. Acklin, St. Paul, Minn., silver medal. W. J. Stahmann, Weaver, Minn., bronze medal. Scott Lamont, Jerrett, Minn., bronze medal.

Extracted Buckwheat Honey.—Douglas Co., Omaha, no recommendation.

Alfalfa Extracted Honey. — G. W. Swink, Rocky Ford Colo., silver medal. Lovesy & Bourk, Salt Lake City, Utah, bronze medal. E. Kretchmer, Red Oak, Ia., bronze medal. A. G. Forney, Turner, Kan., honorable mention. Fred H. Glick, Atchison, Kan., bronze medal. Bennett & Dieshum, Garden City, Kan., honorable mention I. L. Dieshum, Garden City, Kan., bronze medal Nebraska Commission, York, Neb., honorable mention.

Linden Extracted Honey.—Nebraska Commission, York, Neb., silver medal. Aug. C. Davidson, Omaha, bronze medal. L. G. Clute, Greeley, Ia., silver medal. Douglas Co., Omaha, silver medal. Nathan Jones, Howard Lake Minn., bronze medal.

Raspberry Extracted Honey.—Nate Williams, Nimrod, Minn., silver medal.

Honey in Marketable Shape.— Aug. C. Davidson, Omaha, bronze medal. Nebraska Commission, York, Neb., bronze medal.

Honey Sugar.— L. D. Stilson, York, Neb., silver medal.

Honey-producing Plants, Pressed and Mounted.—Winnie L. Stilson, York, Neb., gold medal. Douglas Co., Omaha, bronze medal. Cleveland Cross, York, Neb., bronze medal. Clark E. Beil, York, Neb., bronze medal.

Unrefined Beeswax.—E. Kretchmer, Red Oak, Ia., silver medal. Douglas Co., Omaha, honorable mention. L. D. Stilson, York, Neb., bronze medal.

Designs in Beeswax.—Mrs. E. Whitcomb, Friend, Neb., gold medal. Douglas Co., Omaha, silver medal. Mrs. Mary Segar, Omaha, Neb., silver medal. Mrs. Della Benson, Omaha, silver medal

Reproduction of Bee Culture 50 Years Ago.—Douglas Co., Omaha, silver medal.

Sweets in which Honey is Made to Take the Place of Sugar.—Mrs. E. Whitcomb Friend, Neb., silver medal. Mrs. Frank J. Preiss, Omaha, silver medal.

Exhibit of Bees and Queens in Cages.—Nebraska Commission, York, Neb., silver medal. Douglas Co., Omaha, silver medal.

Exhibit of Queens in Cages.—E. Kretchmer, Red Oak, Ia., honorable mention.

Experimental Test of Full Colonies of Bees.—Douglas Co., Omaha, silver medal.

Honey Vinegar.—G. M. Whitford, Arlington, Neb., honorable mention. Douglas Co., Omaha, honorable mention.

Metheglin. — Aug. C. Davidson, Omaha, bronze medal.

NEBRASKA FARMER SPECIAL PREMIUMS.

Display of Culinary Products in which Honey is Made to Take the Place of Sugar.—Mrs. E. Whitcomb, Friend, Neb., 1st.

Display of Honey, Supplies, Bees, and Queens.—Nebraska Commission, York, Neb., 1st.

Display of Designs in Beeswax.—Mrs. E. Whitcomb, Friend, Neb., 1st.

Largest and Best Display of Designs in Beeswax.—E. Kretchmer, Red Oak, Ia., 1st.

Largest and Best Display of Bees and Queens.—L. D. Stilson, York, Neb., 1st.

Best and Largest Display of Extracted Honey.—Nebraska Commission, York, Neb., 1st.

Best and Largest Display of Comb Honey.—Nebraska Commission, York, Neb., 1st.

Honey-producing Plants.—Winnie L. Stilson, York, Neb., 1st.

Display of Apiarian Goods and Implements.—A. I. Root Co., Medina, O., 1st.

Display of Honey, Bee-supplies, and Queens.—E. Kretchmer, Red Oak, Ia., 1st.

THE QUALITY OF SOUTHERN HONEY.

THE editor of the *Amer. Bee-keeper* protests (and rightly too) against the statement wherein I am made to say in the report of the Omaha convention, that "Southern honey has a strong flavor which is liked by some." Of course, there are always chances for inaccuracies in reports ; and while the reporter took my rambling remarks with ordinary accuracy, he made me say some things that I did not intend to say. What I actually said, or at least thought I said, was that *some* Southern honey has a strong flavor.

In the general discussion, we were talking about the peculiar flavors of different honeys, and why some preferred a kind of honey that another disliked. I mentioned the fact that buckwheat honey in New York is preferred by some to any thing else, and that, in a similar way, there are certain flavors in Southern honeys that are liked by some and disliked by others. Bro. Hill says he would not for a moment attribute to me the "thought of a willful misrepresentation," and that he believes I am "utterly incapable of studied deception." I thank him most sincerely for such a statement ; and while I may not deserve it, I try to be what the language implies.

DOOLITTLE'S LATEST FEATS IN QUEEN-REARING.

G. M. DOOLITTLE, in a private letter, referring to his book on queen-rearing, says:

> "Scientific Queen-rearing" cost me five of the best years of my life, as that number of years were given up almost wholly to that work, as far as deep study and experimenting and planning were concerned ; and ten years of work since along that line, without a single failure, with one *single* batch of cells, has proved the soundness of what I dug out. Letters have come to me from all over the world, and are still coming, fully equal to those of the first two or three years, telling of the great success obtained by the plans given in the book. This summer I have excelled any thing I ever did before. I prepared just *one* colony for cell-rearing the latter part of May; and this one colony, having a laying queen below all of the time, has raised me a batch of 18 queen-cells, every three days, ever since, up to the tenth of this month, at which time I started the last batch of cups for this year. I find by my tally-sheet that the average number of cups given each three days was 21, and the average number of queens obtained was 18. So you can see how successful it has been with me during nearly four months in succession. And there are many others who say they do nearly or quite as well. The beauty of the whole thing is, every queen-cell and queen is perfect, and fully equal in every way to those reared during natural swarming, where nature does her level best. No cells were ever moved from this one colony, from the time the cups were given till the ripe cells were taken away.
>
> Borodino, N. Y., Sept. 28. G. M. DOOLITTLE.

NOTES OF TRAVEL

BY A. I. ROOT.

THE SMALLEST ELECTRIC-LIGHT PLANT IN THE WORLD.

While visiting with the ladies at Mr. McKay's, in the little town of Gardiner, I happened to glance out the back door, and caught a glimpse of the Yellowstone River. In reply to some questions, Mrs. McKay said the Yellowstone and the Gardiner Rivers united just at the foot of the mountain, and I soon climbed down. The first thing that met my sight was a man wading in the clear water of the Gardiner River, fixing up a sort of dam with stones, to turn a part of the water into a sort of race, or irrigating-ditch, that ran along the side of the hill; but the speed of the water along this flume, or race, made me think it was not for irrigating purposes after all. The stranger informed me, in answer to my questions, that this water in the race carried a little water-wheel that pumped water up into the town, and also carried a little electric-light plant. He said he had been told that it was the smallest electric-light plant in the world. He courteously showed me over the plant, and started it up. The water-wheel was only an ordinary overshot wheel, much like the old-fashioned water-mills. It could be arranged to run the pump or a dynamo, either one or both together. The current ran up the hill, then branched out around the town to light the houses. It seems to me the expense of the whole plant could not very much have exceeded $500, and yet here were water and light both, carried up the hill to the little village of perhaps a hundred inhabitants.

BOZEMAN, MONTANA, AND ITS VICINITY.

In the Home Paper in our last issue I spoke of crossing the Rocky Mountains on my wheel, for I found that it was indeed the Rocky Mountains up one side of which I climbed and then down the other, after that precious gift of physical strength—at least the little book called "Wonder Land," published by the Northern Pacific R. R. Co., says it was the Rocky Mountains. Over the mountains on the western side I came down into the Gallatin Valley; and going down that mountain canyon was one of the most delightful experiences I ever had in my travels. A great part of the road is cut in the mountain side, and it runs around first to one side and then the other, all the way going down hill; and there is something strange and weird in this queer thing I have mentioned before, where you get your sense of level mixed up. At several points it seemed as if the crooked roadway, and railroad as well, were really running down into a frightful abyss to the interior of the earth. If somebody had told me there was a spot in the world where a great hole went down to China by a zigzag course, I should have said this was the very spot. Several times I alighted from my wheel and looked down into that awful abyss with open eyes and open-mouthed astonishment. I knew it must be a sort of optical illusion, but it was just as grand, nevertheless. It really seemed as if my wheel would pitch headlong down this tremendous incline in spite of brake or any thing else—that is, it *looked* that way; but I knew by the effort to hold the wheel back that it was not so very steep after all.*

Part way down the incline there is one of the most beautiful springs I ever saw anywhere on the face of the earth; and this is a *real* cold-water spring. It comes out from the side of a great sandy rock or mountain; and the prettiest part of it is, the whole surface of the water is covered with a most magnificent growth of water-cress. I ate cress and drank spring water, and bathed my hands and face in the cooling liquid again and again. When you get clear down into the valley, the winding road goes off through shady woods alternated with fields of alfalfa and other grains.

It was a little after dinner-time when I reached the beautiful town of Bozeman. Here we have fine buildings, street railways, and almost all the improvements of an Eastern city. A little out of Bozeman, at the terminus of the electric railway, is the Montana Experiment Station. I had letters to some of the prominent citizens, and they very kindly left their business and went out with me to visit the station. The very first thing that caught my eye on entering the grounds was a plot of white clover grown by irrigation. I wish the bee-keepers of our land could all have a glimpse of this, and see what is possible in the way of growing clover. The heads were so exceedingly large that I should have called it a field of red clover had it not been for the shape of the leaves and blossoms I am greatly indebted to Prof. S. M. Emory for his very kind services in showing me over the grounds as he did during my limited stay. To tell the truth, I should not have visited the experiment station at all had it not been for the fact that I had laid my plans so as not to travel on Sunday, so I had Friday and Saturday for explorations through the Gallatin Valley. It is a little singular that there are special localities in this great land of ours that are fitted for some one particular crop better than any thing else. Now, this valley seems to be the great place above all others for growing barley. We are told that 14,000,000 lbs. was shipped to Europe in 1896. It is also a great wheat country. Prof. Emory said, "Mr. Root, you can not grow wheat in the East for fifty cents a bushel; but we can grow it here in Montana at that price and do well." In fact, winter grains, all of them, can be grown nicely without irrigation. Here in Gallatin County a yield of winter wheat of fifty bushels per acre is not unusual; and I am told the general average of the county for the years 1893, '94, and '95 was only a fraction less than thirty-eight bushels per acre."

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*By the way, for climbing mountains it is of the greatest importance that the wheel have a good substantial brake. If something should give way, going down these terrible declivities, especially where you are making any sort of speed, it would probably be death to the rider. The brake on my chainless Columbia seemed to be all that could be desired.

Prof. Emory showed me some farming that was certainly ahead of any thing else I ever saw on the face of the earth — that is, in the way of grains; but this was under irrigation. Even field peas stood up almost as high as one's head, loaded with pods. The peas were grown for feed, and also for the peas themselves. With the help of these great crops, pork and beef are produced at a figure that it would be impossible to touch in the East. Of course, the expense of transportation to distant markets is a drawback.

I did not have time to examine the test-plot of potatoes as I should have liked, for I wanted to get the next car back to town. I was somewhat pleased to hear Prof. Emory's assistant say, in answer to a question of mine, that, all things considered, the Early Ohio was their best extra-early potato.

Prof. E. has not only some bright original ideas in regard to growing crops, but he showed me how to make comfortable buildings for stock, with a very small outlay in cash. First, log houses are built from the spruce timber that is so cheap and durable in that locality. Now, when you attempt to plaster up the cracks of a log house with clay or mortar the filling will always be dropping out. Prof. E. remedies this by nailing strips of lumber along the logs, one on the upper edge and another on the lower edge. By having them in such a position that a straight-edge just touches the logs as well as the strips, you will notice this will make the chinking so it can not crowd out. Such buildings are exceedingly warm, and well calculated to withstand the rigors of their cold winters. Another point: Prof. Emory says that, to avoid the criticism that farmers make when visiting the experiment station, that such work imposes a burden on the farmer by increased taxation, he says he has been so far enabled to state to one and all that the Montana experiment station has not thus far cost the Montana farmers one solitary copper. The crops that they grow, together with the government aid, has so far paid for all outgoes. Is there another experiment station in the United States that can say as much? I feel like congratulating the farmers of Montana, and I hope they will avail themselves of the wonderful object-lessons that are to be found all over the farm.

Oh, yes! Prof. E. has some bees. There are seven colonies, if I remember correctly; and to refute the oft-repeated statement that bees can never be wintered in such a climate, he has wintered them thus far in the open air, protecting them by a sort of shed or bee-house, and outside packing, something like a chaff hive, permitting the bees to go out through a chute whenever the weather permits. With all the other work he has on his hands, the bees, I judge, have not had very much attention; but they have given large yields of honey and a steady increase since they were purchased, about two years ago. No wonder they get honey, for there are acres of clover of all kinds in bloom, and so few bees to visit the clover that I jestingly said to him each bee could have almost an acre of blossoms to itself. What a contrast to our overstocked localities in the East, and also in many parts of Arizona!

The ladies told me at Gardiner, that, if I took that trip over the mountains on the wheel, I must surely visit the government fish-hatchery. This is out of the town, in an opposite direction from the experiment station; in fact, it is up a beautiful little canyon. As the good friends who went with me to the station could hardly spare the time, I went over on my wheel alone. One of them remarked that it would be easy wheeling, for it was down hill all the way; but as my pathway was for the whole four miles beside a mountain brook that was constantly running toward me, I did not exactly understand the "down hill" part of it. It looked down hill, but the brook said, "Not so." A great part of the road was sandy and dusty, which made it still more difficult. I was pretty tired and quite thirsty when I caught sight of the government fish-hatchery buildings; and here was another queer optical illusion. When I got over into that notch in the mountains I wondered why the government had placed its plant in a little narrow gorge where one could hardly find elbow room to turn around; but when you once *get there* you will find a nice plot of ground, a full half-acre in extent. Oh what a pretty place it is! A large spring has been diverted, and made to flow through a series of little square ponds. These are arranged with walks between them, much like our beds in market-gardening. The water goes through wire cloth when it goes in, and through wire cloth as it goes out, so the fishes are confined there. Oh what a beautiful sight! I thought there must be untold millions. In fact, they were like swarms of bees, or more so. In the first pool we have fishes about as large as cucumber seeds. The next are a little larger, then larger still, and so on. A great part of their time they spend in swimming up stream in the beautiful, limpid, pure spring water. The spring is large enough so the water goes through all the pools at a pretty good speed; and so while the fishes are swimming quite rapidly they are really standing still—that is, in respect to the visitor who stands in the path beside the pool.

I think I forgot myself several times so far as to ask where they kept the fish in the winter time. Each time, Prof. Henshall smilingly replied, "We keep them right here, just as they are. There is no winter nor summer to them. The temperature of the water never changes."

Does it not seem incredible, that, even though the weather should be 30 to 40 degrees below zero, these beautiful little speckled mountain trout six inches below the surface feel no change? I asked for a drink of water. You see my wheel-ride had made me thirsty. As it touched my lips I was startled. Said I:

"Why, surely this is *ice* water."

"No, the temperature is just 45—always 45."

I looked incredulously over the edge of the dipper. At this he lifted a beautiful thermometer out of the water, and showed me the constant unvarying temperature of 45 degrees.

"Why, do you mean this never changes, winter or summer?"

"Yes, Mr. Root, it does change a little. It is colder in summer than in winter."

Now, I have heard such talk about spring water being colder in summer than it is in winter, from ignorant people; but I was surprised to hear this from a talented professor like my companion, who is in the employ of the government. He guessed my thoughts, and smilingly enlightened me.

"Mr. Root, this spring is the result of melting snows on the mountain. The snows are melting now, and sending down great streams of water through the rocks. Well, in winter a great quantity of snow collects; but the snow at the bottom, near the ground, keeps on melting all winter long. This keeps the spring running. But the greatest melting of snow into water is along when the hot weather commences, say May or June; then a larger quantity of water comes from the spring, and flows more rapidly. At such times the temperature might go down to 44 or possibly 43."

Now, these little speckled trout are the prettiest fellows in the world. In fact, I do not know of any thing that has life that is handsomer. I said there seemed to be *millions* of little fish; but I am told there are only about one-fourth of a million. Just about a million of eggs were shipped from the finest trout regions of Connecticut and Massachusetts, and from the million of eggs about a fourth that many fish will reach maturity. These fishes are used to stock the streams and lakes of Montana, and it is quite likely that the speckled trout that I had been enjoying with such extreme satisfaction the week before was the product of the United States fish-hatchery at Bozeman, Mont. From a little book entitled "Bozeman in the Rockies," I copy the following:

> The jaded worker from eastern city or farm, whose unsteady nerve or suspicious cough or tormenting indigestion was making him pessimistic, is often transformed, as if by magic, into an animal whose daily climbing and eating are equaled only by his capacity for sleep. And this renewal of life, unlike the brief deception of drugs, is genuine.

I want to extend my thanks to Prof. Henshall for the exceedingly pleasant and valuable information he furnished when it was my good fortune to visit him. I was greatly pleased to learn that he was in former years connected with our fish-hatcheries at Sandusky, Ohio. He is well acquainted with the Castalia springs of this State, which I have described before in these pages, and, in fact, he is an enthusiast like myself in regard to the springs of our country, and pure-water supplies in general. By the way, right in sight of the hatchery, in the middle of the mountain brook, there has been discovered a warm spring. They are just now discussing plans to utilize this *warm* spring for growing fishes that require a higher temperature than do the mountain trout.

OUR HOMES,

BY A. I. ROOT.

My strength and my redeemer.—PSALM 19:14.

A good many times in my early experiments in bee culture I watched with great interest the behavior of a bee when its hive was moved away. He would go sailing down to the beloved spot where its home had always been, with perfect confidence, and with light-hearted alacrity with its load of pollen, and possibly honey too. It expected, of course, to hustle in at the well-known entrance where he passed out and in hundreds of times a day without a thought of the possibility that its beloved home was in any way changed, much less taken away entirely. With what astonishment, sorrow, and dismay — nay, even fright — it hovers around again and again, but finds nothing! "Why, what does this mean? what *can* have happened?" Suppose you should some time hasten homeward with hurried steps, not thinking of any possible harm until you were at the very threshold of your door, just when you expected a bright welcome from the happy wife, and shouts of delight from the tidy little ones—suppose just when you were ready for the joyful welcome you should find the home gone — not a trace or vestige, only green grass or possibly a few rotten sticks where the home had always been until this moment—how would you feel? But with the bee the case is still worse. Suppose it is a member of a solitary hive, and it is a season of the year when there are frosty nights, then the loss of its home means death —*annihilation*, perhaps, of the happy busy little insect. If it can not find its home, and mingle with the crowd as one of the busy, humming, restless thousands, it is undone, lost. Sometimes I have seen them vainly exploring, and heard them uttering that well-known mournful hum. At such times I have seen them take wing away off at a distance, back to the fields again — that is, if the fields were not too far away. Then it swings around and says, evidently, "Now I am sure I am all right. There *can* be no possible mistake. I am on the right track I have known so well all summer long, and I must surely strike my home." The result is the same. It finally alights to take breath, and then crawls about disconsolately with its heavy load of pollen. The pollen is of no use; and, even though it be loaded with honey, *that* is of no use. The cool air reminds it that death is near, for that home can not be found. Blossoms loaded with nectar are of no account now. Every thing else sinks into insignificance. I have seen bees under such circumstances make several trips, apparently to make *sure* the terrible calamity had befallen them. Then I have seen them again in a little group at sundown near where the home stood, and there in the morning I have found them frozen stiff. Sometimes they can be revived, but usually not after a very severe freeze.

Where the young experimenter in bee culture has moved the hive only a few rods away, or possibly on the other side of the house, these lost bees will sometimes find their home; and, oh what frantic demonstrations they make when the home *is* found! One who has learned to understand bee-talk can readily take it all in. The half-chilled little chaps set up such a hum of rejoicing that it seems to warm their chilly little toes ; and what a stampede takes place among their fellows when they hear the joyful sound, and hasten to the spot ! It is said that bees that have once wandered about, lost for an hour or two, when they *do* find their home will not soon miss it again. This may or may not be true; but if the change in the location has not been too great they usually, after a few days—perhaps a week or more—become accustomed to the new spot. Some will go every day for some time, and hover around the old spot, apparently forgetting the hive has been moved, but the new spot will be found quicker this time. You see this home is of more importance to a *honey-bee* than to the rest of animated nature. Its very *life* depends on getting back into that busy crowd.

Well, I have been having some experiences of late that have made me think of the lost bee. More cares and worries have been resting on my shoulders during the past two weeks than for years past. During the summer and fall I had a long vacation, or two of them if you choose. I have sometimes thought they were providential in giving me health, strength, and endurance to carry me over the past two weeks. Perhaps I should explain a little to my friends who read these Home Papers. You have been told repeatedly of the immense amount of business that settled down upon us during the year that is just past. Our buildings were too small, our machinery was inadequate; our boilers, engines, shafting, and every thing else were tested to their utmost limit to enable us to get through the season's work; and, even during the fall, carload orders have come so thick and fast that we find it next to impossible to shut down long enough to put in a 400-horse-power engine.

Now, for some years past, as you may know, I have been letting my son and son-in-law (there are two of the latter now, and I think I may say there is a providence in *that* also) take charge of most improvements. In fact, I have not felt able, either physically or mentally, to shoulder the problems that come up constantly from enlarging our business. All along through the fall and summer we were discussing electric transmission as a means of conveying power to different parts of our premises. In fact, we some months ago installed a 30-horse-power dynamo, and conveyed the power in several different directions to test it. We first ran our entire machine-shop by means of a wire scarcely larger than a knitting-needle. Then we hitched another motor to our big printing-press, and, later, to a small press. The pressman simply turns on the current when he wants to use the press, and at all other times there is no rattling of belting and shafting. The composing-room is quiet until somebody wants to use the press. This is not only a saving in expense in transmitting the power, but there is a big saving in using no power to move useless machinery except at the very moment when the printing is being done. Then we use another little motor for pumping water from a well 600 feet distant. On the way to the pump, the wire is run down into a warehouse, and still another motor there operates the elevator ; and the little machine does its work perfectly in hauling up great loads when its services are wanted, and at other times stands quiet and still. We had practically demonstrated that electric transmission is *the thing* for carrying power to distant points on our premises.

Well, when it became desirable to locate our largest planer, requiring something like 40 horse power, at the further end of our saw-room, right adjoining the lumber-yard, the boys asked me what I thought about electric transmission. You know electricity has always been a craze with me. I said, "Get all our ranch into this sort of transmission as speedily as possible," without giving the matter very much thought. Ernest said one day it would cost a thousand dollars, while the old-fashioned way of conveying power would not cost half as much. I said, "All right; go ahead." After a while it wanted $1500; then $2000; then $2500 ; then $3000 to equip nearly the whole factory, anticipating our future needs so we would not need to tear down and build larger again in a few years. Well, after the machinery was ordered, walls taken down, and things turned upside down generally, for the new apparatus, we were appalled to find that the switch-board alone for all these motors and dynamos would cost over $250 — an amount that would almost have purchased a steam-engine to do the work right on the spot beside the planer. Then an electrical expert said the *wires* alone to convey the power to the requisite spot would cost *$170.** Somebody who rather favored the old plan of working said the copper wire itself would cost enough to buy *two* belts to transmit the same horse-power, and we began to be sick of our undertaking. The heaviest part of the responsibility devolved upon myself as president of the institution, because I said continually, "Go ahead." People who had other kinds of machinery for sale—rope transmission, etc.—said a *quarter* of the money would have equipped us nicely, only that electricity is the fashion, and high-toned, etc. We went all over the figures. Different authorities declared that belting would not be satisfactory in the end—that we had better put in machinery right while we were about it.

Let me pause right here long enough to say that I am still satisfied that blunders are often made in putting more expense into machinery than is needed. I know it is a bad thing to build too small and cheaply; but I do think there is another sad extreme. In our own town waterworks, which are very nice, and work beautifully, in my opinion they put in an engine and boiler at least twice as large as they needed. In fact, it is *four* times as large as they need to pump all the water there is in the well. If the well gives a larger stream the longer it is used, may be the apparatus is all right; but I do think there is a good deal of useless extravagance in much of the machinery put in for public use.

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* A little further explanation may be needed here. Our apparatus is run by an exceedingly low voltage on account of the danger from fire in a wood-working establishment. For instance, our dynamo gives a current of 110 volts, and hence it does not endanger human life. Usually, in transmitting power, they go up 250 or 500 volts; and the current that goes from Niagara Falls to the city of Buffalo is somewhere about 10,000 volts intensity. The higher the voltage, the smaller the wire and the less the expense of wire.

Now, friends, I have told two different stories. Perhaps they are both interesting and instructive; but I should not wonder if not one in ten of my readers sees the connection. *Where* are the wires that are to connect the "dynamo" and the "motor"? Well, the connection comes in right here. Some people who ought to know said we had not *only* invested $3000 where less than a third of that sum would have done the work, but for all time to come we are going to be handicapped by the fact that a copper wire to carry our power where wanted would cost more than belting and shafting. Still further, the electric people all admit that it costs nearly ten per cent to convert steam power into electric power, and another ten per cent to get back again from electric power to mechanical power. Ernest, John, and myself had wasted a great lot of money, or at least it looked that way; had got our buildings and machinery all torn to pieces right in the month of November, with cold storms upon us, and no apparent method of retreat. To go ahead was disaster, but to back out was worse. We were like the little bee in my opening story At the very outset I began to pray about it. Satan whispered that *this* was a matter that the Lord could not manage. He said that, even providing God *did* hear and answer prayer, when folks pushed ahead in a sort of foolhardy way, the only way to teach them better was to let them suffer, as a just and fair punishment for their stupidity. I quoted Scripture texts; I referred him to past experiences through all my religious life, and I said the dear Savior had not only been a very present help in trouble, but he had taken care of my blunders, and even of my stupidity, and brought forth good fruit from a thousand things that had seemed at the time to promise only disaster. A few weeks ago I prayed for physical strength; now I prayed most earnestly for wisdom and understanding—*mechanical* wisdom if you choose. I do not know but I prayed more earnestly for help, and emancipation from our troubles, than I ever did for any thing in the same number of days before in my life. I feel almost ashamed to say this, because there are much greater troubles in this world than such as I have described. But this one had to be met and answered at once. Machinists, wood-workers, carpenters, masons, electrical experts, and a lot of other people, amounting in all to nearly a hundred, kept saying by their actions if not by their words, "Well, what are you going to do about it?" I said, "We will tell you after a little." What I meant by "after a little" was after I had *prayed* more earnestly over the matter. The wisdom I asked for did not come, and I became somewhat discouraged, and began to lose faith. I felt like the bee that had lost its home.

For little periods of time I considered pushing ahead through this world of trial and discouragement with my own weak brain and feeble strength and endurance. My health began to fail. I lost my appetite (I guess the real truth is, friends, I lost it for only a few hours); finally I could not sleep nights. Then I thought of the lessons in the Bible in regard to importunity. I remembered that passage in the 36th chapter of Isaiah, 7th verse, where Rabshakeh, the captain of the Assyrian army, jeered and ridiculed God's people because they believed he would hear and answer their prayers. I told the dear Savior that I was ready to do any thing he wished — give up business, devote my life to work in his service in any part of the world he would indicate; and I plead with him that, for the boys' sake — the boys whom I had innocently led into trouble —he would hear my prayer and at least give me peace. I asked him to forgive my lack of faith, and to help me in my efforts to trust him. I thought of the words of our little text—"my strength and my redeemer"—my *home*. I said in substance, "O Lord, even though I have been thoughtless, perhaps foolish and worldly, give me back my *resting-place* in thee." Then I thought of the words David so often used, "Turn not thy face away from me;" and I rejoiced in hunting up such passages — passages that had always been strange and incomprehensible to me before. Dear reader, do you guess the outcome? Peace and tranquillity came *before* the question was solved at all. I told the dear wife that God was going to bring it about all right, but I did not know exactly how. I told the boys I wanted to consult an electrical expert who had no interest in furnishing either kind of machinery. He came, and I propounded my questions. Said I, first:

"If you wanted to convey 100 horse-power 100 feet from the engine, which would be cheaper—electric transmission or belting and shafting?"

"Electric transmission will be about as cheap, and a great saving of power, especially in your case, as you wish to make a quarter-turn in conveying the power."

Then he looked over our "predicament," and said that, under the circumstances, as we were equipped already with belting and shafting, the latter would have been very much cheaper — especially at first cost, but that, all things considered, especially the probable future developments of our business, he thought the boys and myself had adopted the best plan we probably could have done, only that, in many of the little details, there could be modifications that would save us expense. For illustration: In just a few minutes he devised a plan for cutting down $50 worth of wire; then he cut down $50 on the switch-board, and so on. He went on making changes and short cuts for almost a whole day. Oh what a feeling of relief it was to me to find that we *had* been acting wisely after all! I felt like the bee that had found its home, and I have been thanking God ever since for that *home*, unchanged, and grounded now more firmly on the solid rock than ever before. In the case of the bee, his home was taken away by outside influences. In my own case the dear *Savior* was right there, ready as he always has been, a very present help in time of need. *I* was the one who was truant. With all my teachings, and with all these years of experience, I was ready to doubt, simply because I thought I had innocently blundered.

Just when I was most distressed and troubled about this thing — yes, when I was praying most earnestly over this business entanglement—a message came from my old pastor, Bro. Reed, asking me to come and talk in a little town where he had been holding meetings. He wanted me to speak on business and religion. He said the business men had all agreed to shut up their stores and all their places of business, to come and hear me talk. At first it seemed as if I could not possibly leave my home at such a time. In fact, I was so beset with doubts and worries that I really had nothing cheerful to talk about. I thought of Jonah, and of God's servants in olden time who excused themselves and refused to do his bidding. What I did do was to say, "Lord, help!" and then I started off to meet my appointment at a place a little difficult of access. My talk did *me* good; and, judging from the looks of the churchful of bright, intelligent people, my talk was helpful to them. I decided that I would listen to God's call, whatever it cost, and trust him for the outcome; and it was just about at this time that peace and faith came. I do not mean to tell you, dear friends, that *all* my burdens and anxieties have been lifted from me. I do not believe it is God's will that I should be spared from all anxieties and worries, for they, above all other things, drive me to the feet of the dear Savior—to that home, that haven of rest. After every such encounter as I have told you of, that "home of the soul" seems to me more precious. Without it I should be lost and ruined. With the great God of all the universe by my side to consult and confer and advise with, I am happy, and thank him every day for having given me a human life to live. But if I had to fight my battles alone with my feeble understanding and wisdom, with my frail physical frame, I should be lost and ruined and undone. And the greatest and most glorious part of it all is, that the invitation is not to me only, but to every child of humanity.

> Come unto me, all ye that labor and are heavy laden, and I will give you rest. Take my yoke upon you, and learn of me; for I am meek and lowly in heart, and ye shall find rest unto your souls. For my yoke is easy, and my burden is light.—MATT. 11:28, 29, 30.

You see this invitation covers *all*, and, like the solitary bee, we are finally to be gathered together in one fold, where misunderstandings, jealousies, and vexations of every kind are known and heard no more.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

POTATOES DURING 1898.

I have several times spoken about getting nice potatoes, planted after taking a crop of strawberries from the ground. Some time near the first of July, after we had made our last picking of berries from that rich creek-bottom ground, we plowed under about a quarter of an acre, and planted it to Manum's Enormous potatoes. Of course, the berries had been heavily manured, and mulched with coarse manure during the winter. The patch had borne over two full crops. When we decided to plow up the strawberry-patch, clover, weeds, and every thing else were allowed to grow; but we planned to get them under ground before any weed could mature seed. The prickly lettuce is the worst weed we have in getting into seed before we know it; but we hold it back by mowing the tops off; and after we get weeds, berry-plants, coarse manure, and every thing else nicely turned under, in go the potatoes. One of the specially good things about the Enormous is that it will keep solid and firm clear into July, and almost without a sprout, and yet when planted they usually sprout very promptly, and almost without a failure — that is, where the seed is cut to two eyes. We had a pretty severe drouth in July; but when the rains in August set in, the potatoes were "a thing of beauty;" and they were growing bright and green, a great part of them, until the 27th of October; then we tried to find a day dry enough to dig them, but did not find it till this 3d day of November. Oh what a sight it was to see the potatoes roll out! There are quite a lot of them that weigh between two and three pounds each, and scarcely a small one in the lot, and not a scabby one—at least, I have not noticed any. And, by the way, these late-planted potatoes are almost always smooth and clean. Of course, the weather has been exceedingly favorable — that is, there was no frost until toward the first of November, and no lack of rain since August. In fact, there has been too much rain if any thing.

For once in the world I let my big German friend have his own way about hilling up. He hilled them up again and again, making sharp mountains of every hill, with a sharp valley between. With the great amount of wetness this time, this happened to be just right, and he kept the potatoes covered so there was almost not a sunburnt one in the lot. We have just put them into the cellar, and the yield is very close to 100 bushels from the quarter-acre. It would have been more than 100 had it not been for a little circumstance. The piece of ground was not all covered with strawberries. On one side there were several rows of Gault raspberries. Some of the friends have complained because I have not reported in regard to these as I should have done. If you will look over our back numbers, however, you will find that I have several times said the Gault never did as well on our ground as on that of the originator. Perhaps my soil is too low and too rich. But, worst of all, we have had to abandon growing all kinds of black-cap raspberries on account of anthracnose, and the Gault was no exception. But let us now go back to the potatoes.

A great many people are surprised to see me plow under not only raspberries but blackberries, when they are as high as the horses' backs. We do it with a plow specially made for this purpose. With a heavy log-chain, and a good stout man like my German friend to follow and put the brush under with soil over it, with his big heavy feet, we succeed in getting every brush and brier out of sight, and usually have fine crops of potatoes where we turn the berries under. This time, however, with the drouth that followed just after planting, the large amount of brush made the ground so dry that not half of the potatoes started at all. The part that did start, however, received such extra care by hilling, etc., that the vines finally covered the missing spaces, and we had an astonishing yield for the small number of hills of potatoes. On this same strip of ground we planted also the potatoes from Maule that were grown in the greenhouse last winter. The experiment came very near being a failure, however, because the new green potatoes taken out of the greenhouse would not sprout right away. In fact, almost none of them sprouted until they had been planted about a month. Then occasionally one would come up, and so on, all through September and October. We took great care of them; and, even with all these drawbacks, we secured three bushels, and some of them weighed 2 pounds apiece. From the one potato that Maule let me take for experiment last winter, I have now three heaping bushels—or, rather, Mr. Maule has, for the potatoes belong to him and not to myself. I have proved this, that potatoes may be grown in a greenhouse over winter, and the potatoes thus grown may be planted so as to raise a crop the summer following.

The worst drawback in my experiment was, as I have mentioned before, that I put the potatoes in some soil that had been on the benches for five or six years. Had I used new soil from outdoors, I think I might have had two or three times as large a crop from one potato.

Now, friends, here is where the "high pressure" comes in: That little piece of ground gave us a splendid crop of strawberries in June, and a *magnificent* crop of potatoes in October, and we are now preparing to put in rye, and in a few days I expect to see the ground green with the third crop in one season, outdoors. By the way, this new potato of Maule's looks considerably like the Enormous, and behaves much like it, only it is a red or reddish potato, instead of white, and I think it is more disposed to be prongy than the Enormous. The great amount of rain, however, during this past season, has made many potatoes badly shaped that would otherwise have been smooth and round. Our potato crop, however, is a splendid one, especially the late-grown sorts. Nobody succeeded, if I am correct, in growing extra-early potatoes *planted early.*

SCABBY POTATOES.

A year ago I was unfortunate in selecting a piece of ground for my test-plot of early potatoes. They were so scabby that a great part of them were apparently unfit for any thing. Some varieties, it is true, were worse affected than others; but nearly all of them were very bad. As an experiment I took a peck of each kind and treated them with corrosive sublimate, and planted them on a piece of ground where the potatoes had never been affected by scab, and the result was a nice lot of potatoes. The scabby seed, after treatment, seemed to be just as good as any. Some nice clean potatoes, however, planted where scab had been so bad last year, were very badly affected, but not as badly as last year; and this piece of ground that seems to be so badly affected by scab was very heavily treated with sulphur three or four years ago. These experiments seem to prove that corrosive sublimate kills the scab in potatoes; but sulphur does not kill scab fungus in the ground—at least, not with us. My experience is that potatoes planted late, say toward the first of July, are very much less liable to be scabby.

BUDDING POTATOES.

I clip the following from *American Gardening* for Sept. 3:

> The Rhode Island Experiment Station reports an interesting experiment on budding potatoes for the purpose of hastening their maturity. The results showed very favorably for budding. Not only did the potatoes from the budded seed mature earlier, but the yield was very much larger, showing an average increase for the budded seed of about 44 bushels an acre.
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> The process of budding is described as follows: The most desirable tubers for budding are those about the size of a hen's egg, sound, and not mutilated in digging. They may be reserved for the purpose when digging the previous crop, and. if allowed to become greened by exposure to sunlight so much the better, or they may be selected from the bin at any time. During stormy days, or at any convenient time during the winter, these seed tubers can be placed in the trays and then stacked up anywhere in the cellar, secure from rats and frost until wanted. The tray to be filled is placed upon a box or bench, and one end elevated about a foot by placing a box or measure under it. Then, beginnning at the lower side, the potatoes selected are carefully packed into the rack, stem end down, as closely as possible, one layer deep. Tubers cut or pierced by the tines of a potato-digger or fork should not be used, as they are likely to produce sickly or inferior buds.
>
> About six or eight weeks before planting-time, the rack should be placed in a warm and light place, where there is no danger of frost, or damage from rats and mice, and the tray placed in the rack. If the temperature is moderate. 60 or 75 degrees, and a fair amount of light reaches all parts of each tray, no further attention is necessary; they do not require watering. After a few days tiny white points will be seen at the eyes of the tubers, and a few days later it will be noticed that one and often two buds on each tuber will have made more growth than the others. These buds are far different from the white watery sprouts of potatoes kept in a dark cellar. They are thick, firm, and tough.
>
> If conditions are right, at the end of six weeks they will be from half an inch to an inch in length, and from one-fourth to three-eighths of an inch in diameter, with many rudimentary roots at the base waiting for the moment when contact with mother earth shall enable them to burst forth and go about their work of gathering plant food.

This, of course, is only a condensed account of the plan outlined in our book on potato-growing on the Island of Jersey; and we can add that, after testing the matter for several seasons, it is *the* plan for growing tremendous crops of extra nice potatoes. It is true, it takes more seed, but there will be no missing hills; and, if the work is done properly, every hill will give a big yield. I may add that, in our practice, we use our potato-boxes slatted all around, placing another temporary bottom of slats half way up. Each box then holds two tiers of potatoes. After danger of frost is over we store them on the barn floor with the double doors on the north side wide open. Where seed is scarce and valuable the potatoes can still be cut to one eye, or, better, to two eyes. Now is the time to pick out potatoes of the proper size, and save them for next year's planting.

ECONOMIC GRASSES.

The above is the title of a very valuable bulletin from the Department of Agriculture, Washington. It describes, sometimes at considerable length, 252 grasses of more or less value, and 91 of them are very accurately pictured, so that any farmer would recognize them at a glance. It tells where they are valuable, and where they are found to be pernicious weeds. It tells what kind of grasses you want for hay, pasture, lawn, for wet lands, for embankments, and for holding shifting sands. In my travels I have studied considerably the grasses for different purposes. Since looking over this book I shall always look at them with still more interest. This family of grasses includes many things we might not suspect; for instance, millet, wild barley, broom-corn millet, chicken corn, Egyptian corn, Kafir corn, pampas grass, rice, sorghum, sugar cane, chess, teosinte, wheat, and, in fact, I do not know but pretty much all the family of grains come under the head of grasses, especially the wild uncultivated grains. If you want the above, write to the U. S. Dep't of Agrostology, calling for Bulletin No. 14.

KIND WORDS FROM OUR CUSTOMERS.

THE ANTI SALOON LEAGUE, ETC.

Dear Mr. Root:—I have just read your article in your issue for Sept. 15, on the saloon problem as it presents itself in Medina. It was especially interesting to me, as the Anti-saloon League work has just been brought to my notice this summer. I am working at present to get a local league established in our township. If we do, our first work will be to enforce the Sunday-closing law, and it is high time somethhing were done to stop the abominable work. Saloons in our vicinity treat this law with contempt, and the township officers haven't "man" enough about them to check them.

I was surprised and glad to know that you were so intimately connected with the Anti-saloon League, and pray to God that it may do as grand a work here in Michigan as it has in Ohio. I wish to be always identified with it. I thank you for the article in your journal, and hope you may have abundant success in keeping rid of saloons in Medina. E. M. HUNT.

Bell Branch, Mich., Sept. 18.

A KIND WORD FROM ZULU LAND; SUPERSTITION AND FRAUD NOT CONFINED TO AMERICAN SHORES.

Dear Brother Root:—In your noble fight against superstitions and humbugs it may encourage you as well as strengthen your cause to know that you have sympathizers in such a far-distant land as Natal, South Africa. It may be expected that the Zulus should have some absurd notions as to pathology, and we can easily see the uselessness, not to say harmfulness, of the nostrums which they suppose to have a wonderful effect on the human body. We pity their ignorance and superstition; but, judging by the humbugs which you are continually exposing, it appears that many people in Christian lands are not far behind the Zulu as to superstition.

You remember that wonderful "Hall's remedy" which you showed up several years ago. Before I had seen what you had said about it I was then in America, and, visiting a brother-minister, he was very anxious to sell me that wonderful secret. He said the usual price was $8.00, but he would let me have it for $4.00. But I did not take on at all. I told him, in the first place, it did not look reasonable. "If Dr. Hall is a Christian, as he professes, why does he charge $8.00 for a book which could be sold for five cents at a large profit?" That was not my idea of Christian benevolence. But my friend hung on to me so persistently that I finally took out $4 and laid it on the table, and told him, "I do not want the remedy for myself; but if it is as good as you claim take this money, and, when you find some needy person whom you can help by this remedy, you may give it to him in the name of the Lord." He would not take my money, and I suppose he did not carry out my scheme of benevolence; but he did not bother me any more. The next number of GLEANINGS I received after that contained your criticism of this remedy. I sent the magazine to my friend, with the article marked. I have not heard from him since.

You would think educated men and ministers of the gospel ought to have more sense, not to speak of honesty. But then, there are so many testimonies of cures. Yes, so there are for all the medicines of the witch doctors here. Let me tell you what some of these medicines are: Snakes' bones, hyena fat, crocodile claws, roots, and bones of all sorts hung about the neck or on the wrists. One kind of medicine is made of the sweat and dirt scraped from the body of the doctor. Another is made of the vitals of human victims waylaid for the purpose. Of course, the English government is supposed to prevent practices of this kind; but the police officer can not account for every mysterious disappearance. I know of one very sad case of this kind. A farmer's child was missing one day after a little party which had been made for one of the children. Days and nights were spent in search by the agonized parents, assisted by their neighbors. That was many years ago, and nothing has ever been seen of the child since; but it is the firm conviction of the father, corroborated by different circumstances, and the testimony of a dying native, that the child was murdered by a native doctor in the vicinity, to be used as medicine. This is all very horrible; but the strangest thing about it is, that these medicines do seem to have a powerful effect, and it is impossible to convince our most intelligent native converts that they do not. I once had a long talk with one of our most advanced native preachers on the subject. I tried to show him that it is all in his mind; that snakes' bones and hyena fat, and all that sort of trash, can not have the effect that he supposed. "Yes, master," said he, "I know it seems very absurd to you; but I must believe what I have seen." Then he went on to tell me of cases which had come to his knowledge. One was a letter that had been doctored. He first looked at it himself, not knowing that it had been doctored, and it made his eyes as red as blood. Then two more members of his family looked at it, and each in turn, as his eyes gazed on the fatal page, fell down in a fit. Nevertheless, this letter which had such a powerful effect on those who looked at it had been handled and carried twenty miles, and did not affect the messenger at all.

Another case was that of a young lady colonist. She had been sick for a long time, and tried many doctors and medicines without relief. Then in a freak she called a celebrated native doctor. He examined her, and said, "I do not know that you are like the black people; but if you were a Zulu girl I should say your trouble is from a lover. It is just like what I have seen when a disappointed lover revenges himself on his mistress with evil medicine."

"Why," said the lady, "I believe you have hit the case exactly. I did disappoint a lover and I believe he is now using medicine to make me sick in this way. But can you do any thing for a complaint of this kind?"

"Oh, yes! if that is what is the trouble, there is medicine to counteract the evil influence of the one who is trying to punish you."

So she was treated for this complaint, and in a very short time she was restored to perfect health.

So you see how the witch doctor can get just as much testimony for the marvelous power of his medicines as we have given for the most popular patent medicines, and, in my opinion, the one is quite as effective as the other.

I must close now; but if this communication should prove to be of any interest to your readers I may venture another at some future time, on my experience with a bicycle in the mission field.

Groutville, Sept. 6, 1898. W. C. WILCOX.

WANTED.—All the readers of GLEANINGS to send for sample box of Frisbee's Pure Alfalfa-clover-honey Cough-drops, and their 48-page illustrated honey-recipe book, "Food Value of Honey," with handsome lithograph cover. All mailed for 10 cents in stamps or silver. Copy of honey-recipe book mailed *free* for the postage, two stamps. Write for wholesale price. Sample box sent for 6 cents.
R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

In writing, mention Gleanings.

SEE THAT WINK?
BEE SUPPLIES.
Root's Goods at Root's Prices.
Pouder's Honey-Jars and every thing used by bee-keepers. Low freight rates; prompt service. Catalog free.
"WATCH POUDER'S AD"
WALTER S. POUDER,
512 Mass. Ave., Indianapolis, Ind.
In writing, mention Gleanings.

FOR SALE. One hundred barred Plymouth Rock cockrels at $1.00 each, if taken soon.
CHAS. H. RUE, Minerva, Ohio.

FOR SALE.—Two hundred acres of good land, thirty acres of creek-bottom land, good pastures; forty stands of Italian and hybrid bees
W. H. READ, Pace, Ga.

QUEENS. **Warranted purely mated,** either golden or imported, by return mail. Untested, ¼ doz., $1 75; select tested, ¼ doz., $2.40; best breeders, $2.00. One **sample** queen to new customer, 55 cts. each. **E. A. Seeley, Bloomer, Ark.**
P. O. M. O. office, Lavaca, Ark.

Wants and Exchange.

WANTED.—To exchange bicycle for Barnes' foot-power saw, or engine
ROBERT B. GEDYE, La Salle, Ill.

WANTED.—To exchange for 500 lbs. of good white granulated extracted honey, one Smalley feed-grinder, as good as new; catalog price $65.00.
WALTER HARMER, Manistee, Mich.

WANTED.—A location for a custom saw and feed mill. WM. S AMMON, 216-18 Court St., Reading, Pa.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
BYRON WALKER, Evart, Mich.

WANTED.—No. 1 white comb honey in 4x5-inch sections; also to furnish my hives and 4x5 sections for a share of the next honey crop, to parties within 100 miles of this city. Address *at once*
F. DANZENBAKER, Washington, D. C.

WANTED.—To buy, rent, or lease a place in the South with bees, in location suitable for queen-rearing; same must be free from all bee disease. Will pay cash for white comb honey.
H. G. QUIRIN, Bellevue, Ohio.

Dovetailed Hives,
Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.
J. M. JENKINS, Wetumpka, Ala.

The A. I. Root Co.'s Goods At Their Prices.
Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted. **M. H. HUNT,**
Cash for beeswax. **Bell Branch, Mich.**

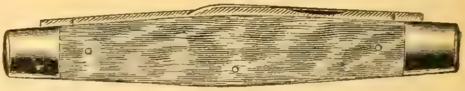
BIG PREMIUM OFFER.

Choice of the Below-named Articles Free for Your Own Renewal of Gleanings with $1.

Stop and Think What This Means.

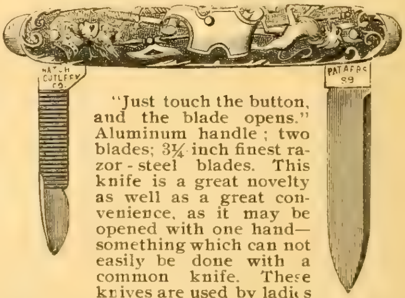
IT IS virtually a year's subscription to GLEANINGS for only 50 cts., as the premium is regularly listed at 50 cts. in our price lists. Of course the above liberal offer holds good only when all arrearages, if any, are paid up, and the $1.00 sent for the year's subscription in advance, the advance subscription only counting for the premium.

Queen-cell Knife, No. 278-N.



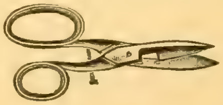
Two blades; brass-lined; German-silver tips; extra-fine steel; length, closed, three inches. We have this knife made expressly for us, and branded with our own name. You can't buy it at any other place on earth. It's the neatest pocket-knife made—a handsome present for either ladies or gentlemen. Excellent for cutting out queen-cells.

Automatic Knife.



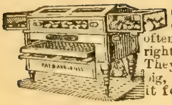
"Just touch the button, and the blade opens." Aluminum handle; two blades; 3¼ inch finest razor-steel blades. This knife is a great novelty as well as a great convenience, as it may be opened with one hand—something which can not easily be done with a common knife. These knives are used by ladies and gentlemen through the United States and Europe.

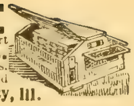
Button-hole Scissors, No. 800.



These are 4¾ inches long; blade beveled; has screw on the side, adjustable for cutting different sizes; polished.

THE A. I. ROOT CO., Medina, O.





SUCCESS OR FAILURE

often depends upon the start. If you start right you have a better chance of success. To start right in the poultry business the buy **Reliable Incubators and Brooders.** They work automatically and cannot fail of good results. Our POULTRY BOOK, 228-pages big, tells all about them and a thousand other things you should know about poultry. We send it for **10 cents.** **RELIABLE INCUBATOR & BROODER CO., Box B 49 Quincy, Ill.**

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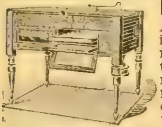

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Hot Air or Hot Water.

A standard machines for hatching strong, healthy chicks—self-regulating, patent egg turning trays, drying room under trays, non-explosive lamp—these are a few of its good points. Our 148 p catalogue gives prices and description, also pointers on poultry buildings, etc., mailed for **6c** stamp. Write for it now.

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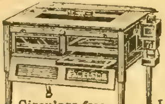

HATCH CHICKENS

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WE TRUST THE PUBLIC

and send them our Incubator on trial. No man should buy an incubator and pay for it before giving it a trial. You **pay not a cent** for ours until you have given it a thorough trial. **It's made so that nobody can fail with it.** A child can run it with 5 minutes attention daily. It **beat** all others at **World's Fair, Nashville and Omaha Expositions.** The best **catalogue** and **treatise on incubation** published, sent for **5 cts.** Plans for Brooders, Poultry Houses, etc., sent upon receipt of **25 cts.**

Von Culin Incubator Co. 8 Adams St. Delaware City, Del.

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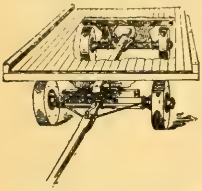

Low=down Broad=tire Farm Trucks

originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons, and milk-peddlers' wagons. Steel-wheel trucks, $18.

Farmers Handy Wagon Co., Saginaw, Mich.

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Peach Trees

grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

THE STORRS & HARRISON CO.,
Box I, Painesville, Ohio.

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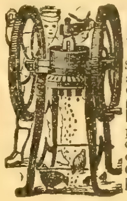

A Business Hen

MUST HAVE A WORKING CAPITAL.

She can double her production of eggs if assisted a little. **Green Cut Bone** and **Mann's Granite Crystal Grit** makes the best working capital.

Mann's New Bone Cutters

prepare the bone in the best and most economical way. Ask anybody for testimony. **Cash or on installments.** Also manufacture **Clover Cutters and Feed Trays.** Catalogue Free.

F. W. MANN CO. Box 37, Milford, Mass.

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Pekin Ducks, $1.00 Each.

We have the largest and finest flock of Pekins we have ever raised, and in order to reduce the number quickly we will for a short time sell in lots of five or more at $1.00 each. They are the genuine long-bodied Pekins, and will surely please. Order quick.

We are headquarters for

"Every Thing for the Poultry-yard."

Largest and cheapest stock of Poultry Supplies in the United States; patentee and manufacturer of New American Incubator and Brooder. Pure-bred poultry at living prices. Send for our catalogue. It's a pretty book of 80 pages, finely illustrated, full of information. You need it. It's free. Address

Geo. J. Nissly, Saline, Mich.

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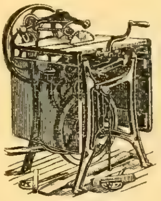

One Man with the
UNION COMBINATION SAW

Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Calalog free.* 1-24ei

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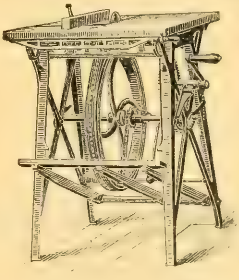

Barnes'
Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.

W. F. & John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

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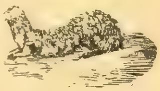

Ferrets! *800* ferrets now ready to ship. Also Italian bees and queens. Belgian hares $2.00 per pair. Price list free.

N. A. Knapp,
Rochester, Lorain Co., Ohio.

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SPECIAL NOTICES BY BUSINESS MANAGER

HONEY.

We can use large quantities of comb and extracted honey, if nice light stock. No amber wanted at present. Advise us how much you have, and send samples of extracted. State price you will take f. o. b. at your station.

THRITY-HORSE-POWER ENGINE FOR SALE.

We have disposed of our 60-horse-power Erie engine, and taken in part exchange a 9x14 box-bed engine with drive-pulley 44x12, and six-foot fly-wheel. This engine has been thoroughly rebuilt within two years at an expense of $100.00, and the former owners refused an offer of $225.00 for it before this expenditure was made. It became too small for their work, so they traded it toward the larger size. We now offer this engine at $150.00, and it is a bargain to any one requiring this size. We should be pleased to furnish further particulars to those interested, on application.

Special Notices by A. I. Root.

ROBBING BEE-KEEPERS.

One of our old-time friends, Mr Edw. Smith, of Carpenter, Madison Co., Ill., has had quite a good many misfortunes during the past few years, not only with his bees, but in the failure of crops on account of drouth, etc. In 1897, however, he secured a small crop of honey that he was very anxious to convert into cash, to pay some neglected bills. Two persons wanted his honey. They wrote very nice and pleasant letters until they succeeded in getting hold of the honey, and then all he could get from them was something like the letters below:

DEAR SIR:—Your letter reached me, and I will say that there were six combs that were cracked. They were split in two. You do not need to be afraid that you will not get your money. I have been off on a visit for about a month, so I did not get the letters you wrote. The money will be sent you as soon as I can get time. Yours truly,

Jan. 15, 1898. ALBERT T. ROE.

Dealer in bees, honey, and bee-keepers' supplies.

Hayfield, Minn.

EDW. SMITH: I did not think you were in such a big hurry for the money, or I could have sent it sooner. I can not send it now before the first of next week, when I will send you what I can, all if possible. The bill will be paid without your putting it in the hands of any collection agency, and thereby making yourself costs.

I hope this will answer. It is the best I can do now. The honey came nicely, and is nice. I shall try to sell it as fast as possible, to convert it into money. H. P. ROBIE.

Ed. Successful Farmer.

Sioux Falls, S. D., Jan. 21, 1898.

Perhaps I should explain that, some time last spring, friend Smith stated the circumstances to me, and asked me if I could help him any. I wrote both parties courteously, asking them to write either to Mr. Smith or myself, if they could not remit to him at once. No answer came. I then waited several months, reminding them that they had not paid Mr. Smith nor given me any reply whatever; and that, if they had any objection to being published as friend Smith requested, please answer at once.

After giving them ample time I wrote again, and now here they are in print, in order that they may not deprive other bee-keepers of their hard earnings in the same way; and I would suggest to other bee-journals that we begin a thorough raid on all people of this description. Let us give them fair and repeated warnings. If they then refuse to do any thing, let them be published. By the way, please notice how provokingly each of these parties writes. The first fellow says he will send the money *as soon as he gets time!* He must be a rushing business man indeed if it takes him something like a year to "get time" to pay a bill for a small amount of honey—$2.09. The other man says that, if he had known that friend Smith was in "such a big hurry," he would have sent the money sooner; but here it is toward a year, and not even a small payment made. The amount was over $24. This man is, too, the editor of an agricultural paper. I suggested to him that an *editor* could ill afford to have such complaints come up against him, but yet he does not seem to be at all disturbed.

PRICES OF SEED POTATOES UP TO DATE.

At present writing no grower has submitted to me a price list; but, so far as I can learn, the prices below will probably be the ruling ones for next season. If any reliable grower, however, offers the same potatoes cheaper, I will make my prices to correspond. Until further orders, seconds will be half the price of firsts, providing you will accept among the seconds those that are somewhat scabby, badly shaped, etc. If you want seconds that are perfect in every respect except in size, we shall have to make an extra price. We are already sold out of seconds of Rural New-Yorker and Carman No. 3, but we have a good stock of all the other kinds.

NAME Varieties are in order as regards time of maturing; earliest first, next earliest second, and so on.	1 lb. by mail.	3 lbs. by mail.	½ peck.	Peck.	½ bushel.	Bushel.	Barrel—11 pk.
White or Red Triumph...	$ 18	$ 40	$ 25	$ 40	$ 75	$ 1 25	$ 3 00
Bovee	30	75	30	50	85	1 50	3 50
E. Thoro'bred, Maule's..	18	40	20	35	60	1 00	2 50
Early Ohio	18	40	25	40	75	1 25	3 00
Early Norther	18	40	25	40	75	1 25	3 00
Burpee's Extra Early...	18	40	25	40	75	1 25	3 00
Freeman	18	40	20	35	60	1 00	2 50
New Queen	18	40	20	35	60	1 00	2 50
Monroe Seedling	15	35	20	25	40	75	2 00
Rural New-Yorker No. 2..	15	35	20	25	40	75	2 00
Sir William	15	35	20	35	60	1 00	2 50
Carman No. 1	18	40	20	35	60	1 00	2 50
Carman No. 3	18	40	20	35	60	1 00	2 50
State of Maine	15	35	20	25	40	75	2 00
Manum's Enormous....	30	75	30	50	85	1 50	3 50
New Craig	18	40	25	40	75	1 25	3 00

As heretofore, we will give as a premium 25 cents' worth of potatoes to everybody who sends $1.00 for GLEANINGS, without asking for any other premium. But please remember that, if you want potatoes sent by mail, you will have to pay the postage. Any old subscriber who sends us a new name may have 50 cents' worth of potatoes instead of 25 cents' worth.

CONVENTION NOTICES.

The annual meeting of the Ontario Bee-keepers' Association will be held in the city of Guelph, on the 6th, 7th, and 8th of December, 1898. There is every prospect of there being a good meeting and a large attendance, owing to there being other attractions in Guelph on these dates; namely, the Guelph fat-stock show, which has a continental reputation; the Guelph poultry and pet-stock show; the Experimental Union. Many bee-keepers have an interest in all these associations. All bee-keepers are cordially invited.

Streetsville, Ont., Oct. 20. W. COUSE, Sec.

TO ALL COLORADO APIARISTS:—The State Bee-keepers' Association will meet in the Capitol building, Denver, room 33, second floor, Nov. 30th and Dec. 1st and 2d. The State Horticultural Association also meets Nov. 28, 29, and 30, their last day being our first. This arrangement is to allow members of each to attend to both meetings, and that any common interests may be discussed or differences adjusted. Never in the history of the association have we had so large a membership and so much work done as this year. There is important work to be done at this meeting. Your marketing committee will have a report of the season's work. Last winter we revised our constitution and by-laws, and there are yet some more changes to be acted upon at this meeting. We will discuss marketing, grading, foul brood, experiments, improved appliances, legislation for bee-keepers, etc. We expect help from the Agricultural College and Senator Swink. Let every Colorado bee keeper who reads this come if possible; and if you can not come, write of what most interests you, and tell us what you want done. Write either to me or to Secretary F. Rauchfuss, Elyria, Col.

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HENRY ALLEY, Wenham, Mass.

What Others Think

Of the Bee-Keepers' Review.

* * *

My Bee-keeping Friend:—If you really knew how good a journal the Bee-keepers' Review has become, you would soon be one of its subscribers. It is my honest belief that, in calling your attention to its merits, I am doing you (as well as myself) a *real benefit*. One way in which I can do this is by allowing you to see what others think of it. During the past year I have received hundreds of letters praising the Review; and from them I select the following:

The Review was never quite equal to what it is now. I was just glancing over a bundle of letters when my eye took in the last number of the Review that the clerk had laid on the desk. The letters were immediately put down and the Review taken up. After I had glanced through it pretty thoroughly the question came to me, "What makes the Review so crisp, and why is it that I take it up so quickly when it comes? Is it because the editor quotes very largely from Gleanings in his Extracted Department?" No, not exactly, although that is a delicate compliment to Gleanings; it is because the editor throws his whole being into his paper. He loves it and his readers.—*E. R. Root, editor of Gleanings.*

Under the keen competition which now obtains among high-class periodicals, any marked degree of success comes only to the publisher of peculiar adaptability. The uninterrupted progress of the Review may be attributed to a rare combination of the qualifications possessed by its editor and publisher, so essential to the upbuilding of a popular bee-keepers' magazine. An active mind, ever vigilant in behalf of its patrons, backed by mechanical genius and mature experience in the apiary, together with a clear, pleasing style of expression; modest, yet unaffectedly dignified and business-like; with a most delicate conception of the beauties of Nature and harmony in art, can not but be productive of a work most gratifying to the cultured tastes which spring from that sublime conception of Nature which is an inherent part of every true bee-master.—*H. E. Hill, editor Amer. Bee-keeper.*

Dear Hutchinson, I have been intending for some time to write you my appreciation of the Review, but this has been an exceptionally busy season with us, and the writing has been put off until now. Permit me to congratulate you on the splendid journal that you are making. When you started out with the eight extra pages I had my apprehensions as to your being able to keep them filled with the interesting matter for which the Review has been so generally noted, but I am pleased to notice that there has been no deterioration. Your correspondents are the best apiarists of our land; and nearly all of the new thoughts and ideas in apiculture come to us through the Review. With the best of wishes for your success, I am yours truly, *R. B. Leahy, editor of the Progressive Bee-keeper.*

I suppose publishers are like ordinary mortals in that they appreciate words of commendation from the reading public to which they cater; therefore, I beg to say, I like the Review, and here are some of the reasons why I like it.

First, because it is well edited.

Second, because it is well printed on good paper.

Third, because its contributors are among the best writers on bee culture in America.

Fourth, because it has no fads.

Fifth, because it has high ideals of literary style, and at the same time tries to be helpful to practical bee-keepers.

Sixth, because I like its editor, and count him among my warm personal friend. — *Eugene Secor, Manager U. S. Bee-keepers' Union.*

* * *

As I have said before, once a really *good* bee-journal visits a bee-keeper a whole year, it usually becomes a permanent member of his family; and, for the sake of getting the Review into the hands of new readers for this "first year," I am making the following offer:

Send me $1.00 and I will send you twelve back numbers, the Review for the rest of this year *and all of next year.* The sooner you subscribe the more you get.

* * *

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The A. I. Root Co., Medina, O.

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Honey Column.

CITY MARKETS.

New York.—Comb honey continues to arrive quite freely, though the demand is fair and market not overstocked, excepting on dark and buckwheat, which is not moving off as well as white. We quote fancy white, 13; No. 1 white, 11@12; amber, 10; dark and buckwheat, 7½@8. No change in extracted, and supply limited. Beeswax dull at 26@27.

Hildreth Bros. & Segelken.
Nov. 23. New York.

Denver. — Our market remains about the same. The receipts are fully up to the demand, and we can quote No. 1 white comb at 11½, put up in our cartons or 24-lb. glass-front cases. Our trade on extracted is still growing, and we can handle large quantities of water-white grade. Can quote No. 1 white at 5½@6; beeswax, 20@25, according to quality.

Nov. 21. R. K. & J. C. Frisbee, Denver, Col.

Chicago.—Our market is very strong at 13c for best grades of white comb honey, with good No. 1 at 11@12; ambers range from 8@11, according to appearance, quality, and flavor; extracted white, 6@7; amber, 5@6; dark, 5; beeswax, 27. All grades and kinds of honey are salable at this time.

R. A. Burnett & Co.,
Nov 19. 163 S. Water St., Chicago, Ill.

Philadelphia. — Honey in comb is selling very freely, and higher prices are being realized. We quote fancy white at 16c in glass, 15 no glass; No. 1, 13; amber, 9@11; extracted white, 8; amber, 6@7; dark, 5½. Beeswax, 27. We are producers of honey—do not handle on commission.

Wm. A. Selser,
Nov. 25. 10 Vine St., Philadelphia, Pa.

Albany.—Not much change in honey market to note. Fancy white comb. 12@13; No. 1, 11@12; No. 2, 10@11; mixed and buckwheat, 8@10; extracted white, 7@7½; amber, 6@6½; dark, 5½@6.

MacDougal & Co.,
Successors to Chas. McCulloch & Co.,
Nov. 25 Albany, N. Y.

Detroit. — Honey has arrived more freely since last quotations, and prices have hardly been sustained. Fancy white comb, 13; No. 1, 12@12½; fancy dark and amber, 9½@11; extracted white, 6@7; dark, 5@5½; beeswax, 25@26.

M. H. Hunt,
Nov. 22. Detroit, Mich.

Columbus.—Movement of all grades comb honey somewhat lighter, and prices easier. Amber and buckwheat having fair demand for market trade. Fancy white, 13½@14; No. 1, 12@12½; amber, 9@10.

The Columbus Commission & Storage Co.,
Nov. 28. 409–413 N. High St., Columbus, O.

Cleveland.—We quote our honey market to-day as follows: Fancy white, 13@14; No. 1, 12@12½; light amber, 11; buckwheat, 9. Extracted, white, 7; light amber, 6.

A. B. Williams & Co.,
Nov. 21. 80-82 Broadway, Cleveland, Ohio.

Springfield. — Buckwheat, 9@10; clover, 12½@15, according to quality of same.

Nov. 22. Perkins & Hatch, Springfield, Mass.

For Sale.—800 lbs. comb honey—500 white clover, 300 buckwheat. Wm. Van Auken, Ellisburg, N. Y.

For Sale.—Extracted honey in 58-lb. cans. White clover, 7½ cts.; fall amber, 6 cts. Samples, postpaid, 6 cts. each. R. & E. C. Porter, Lewiston, Ill.

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Byron Walker, Evart, Mich.

NOTE THIS CHANGE.

All the readers of "Gleanings" have not sent for sample box of Frisbee's Pure-Alfalfa-Clover-Honey Cough-Drops, and we want you to try them. For the balance of the year we will send a full-size box for 5 cents, not quite their cost and postage. Yes; and the honey-recipe book too, if asked for.
R. K. & J. C. Frisbee, Box 1014, Denver, Colo.
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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests

Illustrated Semi-Monthly

Published by The A. I. Root Co.

$1.00 per Year Medina, Ohio

VOL. XXVI. DEC. 1, 1898. NO. 23

STRAY STRAWS FROM DR C. C. MILLER

ED. JOLLEY calls white clover a biennial, in *American Bee-keeper*. It's a perennial "in this locality."

EDITOR YORK saw barrels of honey emptied that weighed 28 pounds before filled and 40 pounds after emptied. No wonder he advises tin. [See editorial elsewhere.—ED.]

A BEGINNER, reading p. 843, might understand that he can have all-worker comb built with shallow starters of foundation. In this locality, especially in the frames after the first five, he'd get a good deal more drone comb than would be to his profit.

"THERE IS NO USE in trying to improve soured honey," says Fr. Greiner, page 829. True, if it's all soured; but in many cases part is soured and part granulated. Turn a crock of such honey on its side, and in a few days the liquid sour part will be drained off for vinegar, and the solid part can be melted up into fair honey.

SORRY that letter of Doolittle's (p. 849) got into a place where the printer's rules made it in small print. It ought to be coarser print, and leaded. That's a wonderful record. If I figure straight, he got more than 600 sealed cells from that one colony, the queen laying all the while. If I didn't know Doolittle so well, I'd think he was romancing.

IT IS SUFFICIENT to observe a colony in full activity in harvest, either in day time when the thousands of workers are going and coming, or in the evening when the fanners are at work, to convince one that a large entrance is indispensable.—M. Bertrand, editor *Revue Internationale*. [This ought to have been printed in capitals. It is true, every word of it.—ED.]

REV. T. J. L. MAYER says, in *British Bee Journal*, "I think your chance with *Apis dorsata* is nil. I had seven hives, hived and fed all winter, and in the spring the little brutes decamped by 20 and 30 a day until each queen, in turn, got disgusted and left the hive." [Here, indeed, is a valuable fact. May be I am wrong, but it seems to me *Apis dorsata* should be tried in their own climate, and that pretty thoroughly, before we can go to great expense in bringing them to this country.—ED.]

DR. E. GALLUP says, in *American Bee Journal*, that he gave a queen 24 Gallup frames, "and she occupied the whole 24 *fully*, with brood and eggs, in short order." Bro. Doolittle, how do you reconcile that with your statement (GLEANINGS, 801), that 9 Gallup frames "entertain the best queen to her fullest capacity as to egg-laying"? Didn't Gallup's queen need nearly three times as much?

"AS THE EYE of the physician judges of internal conditions by external symptoms, so the practiced eye of the bee-keeper can easily determine the condition of a colony without removing a comb."—W. Z. Hutchinson in *Country Gentleman*. If a physician had any way by which he could remove a diseased internal organ and get it safely back in place, rest assured he wouldn't depend entirely on external symptoms.

PROPOLIS, says E. Agassiz, in *Revue Int.*, can be used in the manufacture of fireworks in place of gum-lac. The pulverization of gum-lac is a difficult thing, while propolis is easily powdered when cold. [Propolis for fireworks! and notwithstanding the stuff is ever present it is never where *we* want it! I wonder just how much it would cost the average bee-keeper to gather up 100 lbs. of it, even in cold weather. I doubt if there is any who would take the job at $5.00 per lb.—ED.]

"APARTMENT" and "department" are words that continue to get mixed up in the bee-journals. Doesn't "apartment" refer to space and "department" to kind? The linen and the woolen departments of a store may be in the same apartment, and one of these departments may occupy two apartments. When a queen goes up into a super, she goes into another apartment. [Yes, I have noticed the confusion in the use of the words "apartment" and "department" in one of our contemporaries.—ED.]

E. E. HASTY here, and Valentin Wuest in Germany, have tried raising kinds of clover from which honey-bees could get big yields, but both seem to have given it up discouraged. Wuest says (*Deutsche Illustrierte Bienenzeitung*), it's a mistake to suppose that dry weather stunting the growth of red-clover blossoms makes hive bees get honey from them; but it's the moist hot weather that makes such an abundant flow of nectar that the tubes are filled up within the reach of their short tongues.

"I FIND COWS, wherever I go, eating it greedily whenever they have access to it," says A. I. Root of sweet clover, p. 838. Friend Root, you mustn't talk that way. Lots of places where they won't even eat it sparingly, and I'm pretty sure you've been at some of the places, only you didn't look. Come to Marengo, and you can see sweet clover untouched where cows have been tied on it. But I believe all can be taught to eat it. My horses are eating the hay, and I wish I had a mow filled full of sweet-clover hay.

"EQUALLY PLAIN is the inference that this is the class of words to which I object, because 'a good many like it,'" is a sentence on p. 831 so badly jumbled that it isn't worth straightening. What I meant to say was that "sass" and some other words used playfully were the class of words to which Mr. Taylor objected. [The passage in question should have read: Equally plain is the inference that this is the class of words to which Mr. Taylor objects when he says, "Dr. Miller justifies the use of the class of words to which I object, because 'a good many like it.'" It was our mistake, doctor, and not yours.—ED.]

W. C. GATHRIGHT, p. 807, thinks it more important to have separators come ¼ in. below top of sections than to have passages in center of separators. Has never seen sections bulged at top, and bees finish up honey and seal top row of cells better than with separators that come to top of sections. I'm anxious to believe he's right, and I think he is. [Notwithstanding I have been on the other side of the fence, and that very recently, enough testimony has come in to convert me to the belief that it is important to have the separators drop ¼ inch below the top of the sections. Our fences for 1899 will be narrow enough to allow this space above and below.—ED.]

G. M. DOOLITTLE thinks 6¾ Langstroth frames, rightly manipulated, enough to entertain the best queen to her fullest capacity. I believe that would be less than 2500 eggs a day. I think Doolittle says he has had queens lay 5000 eggs a day. Would the fullest capacity of such a queen be less than 2500 a day for three weeks or more? [See answer to Straw in this issue regarding Dadant's statement to the effect that queens will lose time in hunting for empty cells. If G. M. Doolittle follows the Doolittle method as we follow it, many of his queens will want more room than 6¾ L. frames would allow, or else his locality is essentally different from ours. Will Doolittle explain?—ED.]

INSTEAD of using an introducing-cage with candy for the bees to liberate the queen, a writer in *Centralblatt* winds wrapping-twine over the mouth of the cage, and the bees gnaw it open. Others make a cage of comb foundation with holes pierced through. The question is, whether candy makes bees kinder to the queen when liberating her. I doubt it. [I do not think it makes any difference whether string, candy, or foundation is used, so long as it takes the bees from 15 to 20 hours to release the queen, and that without any disturbance from the apiarist. I have for years believed it was bad policy for the bee-keeper to help along the process of introducing by releasing the queen. In my experience there have been fewer queens by considerable killed when the bees did it themselves.—ED.]

C. P. DADANT thinks if a queen has just enough room for her needs she'll lose time hunting empty cells (p. 791). Looks reasonable. And yet, no matter how much room she has, doesn't she always keep her brood compact? and if so, what good will extra cells be? [Empty cells? If the brood-circle in each frame were filled with brood, I feel very sure that, in our locality, some of our queens would commence filling brood-circles in frames above rather than deposit more eggs in the frames below. Very many of our queens reared by the Doolittle method require more room than an eight-frame brood-nest will allow them; but our queens reared by the old plan would usually have about all the room they required in the single brood-nest. Of course, there are exceptions to both cases. Empty cells? Why, an Italian queen will seldom lay outside of the circle, even though there be empty cells all around it; but Holy Land or Cyprian queens will fill the whole frame out, corners and all. There, perhaps I have not covered your question. If so, Mr. Dadant will do so.—ED.]

MY GOOD FRIEND J. M. Hambaugh says, p. 839, that the most satisfactory feeder in his experience is the Hill. Which makes me wonder whether a Miller or a crock-and-plate feeder has ever strayed within the range of his experience. [Just so. But the greatest objection to these feeders is that they are too small. Either the Miller or the crock-and-plate feeder is large enough to give all a colony requires for winter at one feed. Something cheaper still, and almost as good, is a common tin pan and a sheet of cheese-cloth. Fill the pan with syrup, and lay upon the syrup a strip of cheese-cloth that has first been dampened in water—the cloth serving as a float for the bees. I have known bees repeatedly to empty a pan thus prepared, in a single evening. One difficulty with this style of feeder is that when the pan is emptied the cloth is pretty apt to be stuck down with sugar crystals—not a serious objection, however, because both can be scalded clean. Speaking of the Miller feeder, perhaps I ought to explain why I prefer this to any other. It is because the bees will take the feed out of it when they would not go near a tin pan. Then it is so constructed that the warmth from the cluster can ascend centrally through the feeder to the top of the opening directly over the center of the cluster, permitting the bees to take out the syrup when they wouldn't go near a bread-pan or metal feeder. —ED.]

GENERAL CORRESPONDENCE

LARGE HIVES.

Single-story Large, versus Two-story Eight-frame.

BY C. P. DADANT.

Mr. Editor:—I have now come to the hardest portion of my argument.

> When Greek meets Greek, then comes the tug of war.

But when you and Dr. Miller join Hutchinson and Taylor and Doolittle *against me*, where shall I be? The worst of it is, you have a chance to talk just as soon as I have done, and so destroy the effect of my arguments. Then the other fellows thrust at me between times. I wonder how much there will be left of what I have to say, by the time you all get through tearing it up. Dr. Miller doesn't say much; but, although he claims never to know, he always seems to me to give the hardest arguments in the fewest words.

No, I can't agree with you in double stories of small hives. Dr. Miller's way of putting the second story under the first is certainly the best; but even that does not satisfy me as well as my own way of having it all in one story, expansible at will. You must remember that I speak of a hive as long as the Langstroth, or longer, and about 2½ inches deeper, with a movable partition-board, or dummy, and containing 10 frames. This hive, as I have already explained, is of a capacity that will about accommodate the most prolific queens.

Your eight-frame hive is too small; and when it is doubled, it is too large for the laying of the most prolific queens. If you put the additional story on top, you increase the room too much all at once. This has to be done at a time when the bees need all the heat they can generate, and a large space above them is not prone to help them, as you will readily recognize. Dr. Miller makes the addition at the bottom, and so does away with that objection. The queen will then spread her brood downward. But if you are aiming to raise comb honey, as the queen goes downward, as a matter of course the bees will fill the space above them with honey as the brood hatches, and the result will be from twenty to an indefinite number of pounds placed in these combs before the sections are touched. So Dr. Miller lays himself more liable than myself to the objection of our critics, that our large hives are not fitted for the raising of comb honey. As a matter of course, the same objection works equally well if we put the second hive on top. The fact is plain, that you have more room in your two hives than can possibly be needed by one queen, and that the remaining space must be filled with honey before the sections are filled. If your hive is exceedingly strong, you will probably harvest enough more honey to still render your course more rational than that followed by those who insist on cramping the queen, however prolific, in a narrow compass; but there will be cases when your judgment will have erred, and the queen will not prove equal to the task, and in these cases your crop of comb honey will be null unless there is absolutely no brood in one of the two stories, and you perceive it in time to remove it. My way is plainly the best, for I increase or decrease the room only as fast as needed, one comb at a time if necessary; and when the hive is at its full capacity, if the queen can fill it I have it all in one compact mass, and have a greater surface on top of the brood-chamber for supers. That is, more bees can ascend to the super at one time; and that super with a greater capacity is nearer to the brood than one of the same size with your two-story hive. We all know how important it is in the spring to have the supers close to the brood. My hive is not so top-heavy, thus less liable to tip accidentally. If the queen does not prove equal to the emergency, and does not fill all the combs, there is no difficulty in contracting the brood-chamber by removing the combs that have no brood, to the size wanted by our friends, the lovers of contraction and other methods. With your small hives you have no division-board or dummy; or if you have one it is in the honey-house, piled under a lot of other traps, because you use it only in extraordinary circumstunces. Mine is always here in the hive, for I have one space especially reserved for that purpose; and without this dummy, as I said before, our hive would have a capacity for 11 frames and not 10. So the reducing of the capacity of the brood-chamber is only a moment's work.

Now, don't understand me as advising contraction, for I don't. I want only to increase the capacity of the brood-chamber (if it is not fully occupied already by a populous colony) as fast as needed, and then leave it till the summer is over. If I raised comb honey I would not object to a few pounds of honey more than needed in the brood-combs; for I should expect to use an extractor whenever I saw the need of it. When raising extracted honey, however, there is no fear of too much honey below, if plenty of empty comb has been given above when the harvest was on, and the bees have not had to wait. I have seen the time when it was necessary to crowd the bees a little to get them to put enough honey for winter in the brood-chamber.

I believe I have said somewhere already that we have tried double brood-chambers for extracting, and we did not like them. The addition of a full story, all at one time, unless it is on a hive that has already been given all the room the queen could fill, and is, therefore, very populous, seems to me more than needed. The queen also seems to be more readily attracted to a large body of this kind, and to desert the lower hive. Sometimes she will breed in both apartments; and when one tries to find frames full of honey they have to be taken from the sides, or combs of brood have to be extracted, which makes a possibility of throwing some of the grubs out into the honey. I know that some of our bee-keepers are so careful that this never happens to them, but I confess I can't extract every comb myself, even if I were as faultless as they, and I have to rely on a more or less careful boy to turn the crank.

In short, I have just as much objection to using full stories, Langstroth size, for supers, as I have to using the little, shallow, four-and-a-fourth-inch toy extracting-frames, which run matters to the other extreme, and make too much handling for the amount of honey harvested. The section-case is little enough for comb honey, but its size is entirely inadequate when extracting is the aim; and if you had only tried the six-inch extracting-frame I know you would agree with me.

I propose, in my next, to consider the objectionable features of large hives. It has been lately said, by some apiarists, that I was leading the folks on the wrong track, so I must atone by showing you wherein our faults lie. I hope I am not repeating myself too much. I notice, in reading over my past articles, that I might have condensed my thoughts a little more, and will try to do this in the future.

Hamilton, Ill.

[I must admit that Mr. Dadant has given some pretty solid arguments in favor of his large single brood-chamber as against two brood-chambers of eight-frame capacity. If I am correct, his ten-frame Quinby hive holds an equivalent of comb surface of 12 L. frames. Accordingly, then, Mr. D.'s position is that two eights make four frames too many.

In referring to his division-board, and the facility he finds in reducing his brood-nest, he is apparently laboring under the impression that we can not similarly contract our two eight-framers. All the hives we have sold for years, of eight-frame capacity, have had a division-board as part and parcel of the hive; and it is our recommendation and practice to keep those division-boards in use, for the hive is made just enough wider to leave space for follower. In putting on an upper story, or, perhaps, better still, an under story, we often give only four frames extra; and then, as the bees require more room, give them the other four, or one, two, or three, as circumstances may require; but more often I give the whole eight frames at once because it saves labor, even though it may not theoretically be the best practice.

Now, friend Dadant, when you add *one frame at a time* to your big colonies, do you not thereby make a great amount of labor? Mr. Doolittle used to argue, and perhaps does now, that it is a good practice to put on only one or two rows of sections at a time, and only as fast as the colony can take them. While there is something in this, the majority of bee-keepers put on a whole super of six rows at one operation, because it saves labor. And there is our friend H. R. Boardman, who produces as much comb honey as any one in proportion to the number of colonies. He puts on three tiers of some 40 or 50 sections at once. I told him that this gave the bees too much space to warm up at the start. He admitted that there was something in this, but added that his plan saved labor, and as long as he could produce as much comb honey as his neighbors working on the other plan he preferred his own way.

There is one point concerning which friend Dadant does not explain himself fully. By reading between the lines in one paragraph I gather that his large hives are not adapted to comb honey. Elsewhere I get the impression that he can, with them, produce as much comb honey as any one. In one of his future articles I hope Mr. D. will give us a clear and explicit statement covering these points.—ED.]

SANTIAGO DE CUBA AS A BEE COUNTRY.

Colonies in the Cliffs; A Few Interesting Facts.

BY L. F. HIORNS.

I have just returned from Santiago de Cuba, where I have been since the first of July. I did not find any honey for sale there, but was told that from time to time small quantities of strained honey were brought in. I saw bees working, but failed to find any colonies in hives except at Siboney, where I found four hives. These were about 8 inches square (inside measurement), 2 feet long, open at each end, with a piece of burlap, having an inch hole for an entrance, hanging over the ends. They were on a platform about 4 ft. from the ground.

Unfortunately they had been visited by the soldiers, the honey and comb all removed, and the bees destroyed except in one hive, where there was about a pint of bees and a piece of new comb about 4 inches square. I did not disturb them, and on visiting them three days later I found that some one had cleaned the hive out.

I was told by the Cubans that, before the war, many of the natives had a few colonies in boxes, barrels, or any thing that came handy, but could get no track of any one who had kept more than ten colonies. In many instances I think I was deceived as to the number, it being a habit of the Cubans to tell what they think will please you.

In the caves and crevices of the cliffs along the seashore are the combs of many colonies of wild bees. These are visited from time to time by the natives, and the combs taken away. I tried to get some of the natives to go with me after some of this honey, but could not, being told that the men who did this were still with the Cuban army. As it was impossible to get to the combs without help I could not examine any of these colonies.

From what I saw and was able to learn I would not advise any one to go to that section of the island to locate an apiary.

Scranton, Pa., Nov. 7.

[Just as this goes to press, our correspondent who is to make a trip through Cuba, and report the same in GLEANINGS, writes :]

> I am now in Key West; will land in Havana tomorrow, with wheel and camera; then will give you some news as to what has become of modern apiculture in Cuba, especially around Havana, to begin with.
>
> Key West, Nov. 15. W. W. SOMERFORD.

RAMBLE 156.

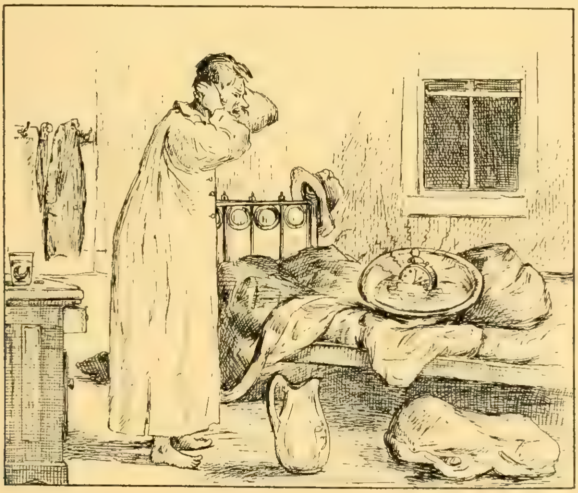
Surroundings at Oro Fino.

BY RAMBLER.

I regretted to leave my old-time friends so soon; but duty to my agreement with Mr. Levering called me further north, and again I was in the little hotel at the Dos Palos station. This time, instead of awakening the dispenser of drinks, it would be his duty to awaken me, and I anticipated that he would have to rustle around dreamland somewhat in order to fulfill his function; but he was equal to the occasion, and did not propose to lose sleep while this age provides mechanical means to arouse a lodger. He collected the lodging-fee in advance, and sent me to my room with an alarm-clock, primed and set with a hair trigger. At half-past one that clock was on duty — whizz-bang-ker-ching-whir-zip. Now, I never owned such a machine, never hired one, nor run one on shares, and knew nothing about the thing. To make matters worse, this clock was of that breed that runs until it is stopped or until it runs down, even if it takes all night.

I nervously tried all of the springs and rings I could find; but the more I twisted them the louder it whanged, upside down or flatwise—whizz, whir. I set it down rather impatiently, and exclaimed, "Now whang, whang." It did its duty faithfully. It answered all of my expectations in respect to alarm-clocks.

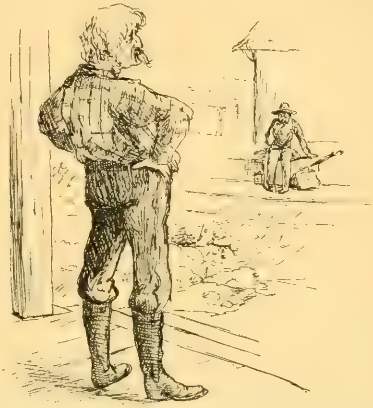
As I proceeded as rapidly as possible to don my attire, it occurred to me that all of the lodgers in the house would be liable to be more or less disturbed, and I tried to smother the thing under the pillow, and then all of the bed-clothes; but, no, sir; it didn't smother worth a cent. The bed-springs were in full accord, and took up the vibrations and aided the clock. It then occurred to me that a bath in the water-pitcher might cure the disease; but the neck of the pitcher was too small, and that scheme failed.



Well, I tell you I was getting desperate. There were ominous noises in other rooms, and my native desire to be quiet and not to annoy other people was undergoing a terrible strain. But I had now dressed; and with my grip in one hand and the clock in the other I made a hasty exit to the office. Ker-whang-ker-chang, it merrily sang as I tumbled it on to the table.

"Say"—

"S-a-y," said a voice almost with mine; and the dispenser of drinks, in his dreamland attire and a disheveled top-knot, strode into the office. "S-a-y—you're a daisy—oh! you're a daisy," and he touched a little wire spring somewhere, and the infernal machine instantly stopped its clatter.



"You didn't expl"—

"S-a-y, I didn't hey?" said he, interrupting me. "Where yer been living all yer life?" and he actually acted angry. He sort o' spit his words through his teeth, in a gorgeous satanic way.

Every effort of mine to explain matters was met with "Oh! you're a daisy—you're a daisy; lived in the woods, hey?"

Then I became indignant, and felt like departing, and did so as rapidly as possible.

I had gotten half way across the street when that same disheveled top-knot appeared at the door, and that same gorgeous voice shouted, "Oh! you're a daisy—going to Frisco, hey? Blow out the gas, hayseed; blow out the gas!"

Well, I was glad to see the headlight of the locomotive, and hear the scream of the whistle to drown that voice. I reflected soberly until I arrived in Sacramento on Sunday forenoon. It came clearly before me that I had met an unmannerly fellow, and that those who dispense drinks are of that order. It also occurred to me that it is better to ask instructions about the simple machines of our daily life rather than to fall into egregious blunders.

After a day's stop with a kinsman in Sacramento I pushed on again toward the north.

After leaving the Sacramento Valley we enter a mountainous region which culminates in the cloud-piercing mass of rocks and snow known as Mount Shasta. While approaching this peak we catch occasional glimpses of it a hundred miles away; and as it towers above all other surrounding mountains these distant views of it are more in the order of the sublime than a view at close range; and the view of it at its base, with no other mountains with which to compare it, is truly disappointing, and the old adage is verified, "Distance lends enchantment to the view."

At Montague, a few miles beyond Shasta I left the S. P. R. R. and joined a few fellow-travelers on a short branch line to Yreka. Our main endeavor on this short line of nine miles was to keep a drunken man from jumping from the train while it was in motion. At Yreka I took the four-horse stage for Fort Jones, and bade farewell to all railroads for several months. Our drunken miner was on hand to take the stage too; and the idea of riding inside the coach, and listening to his senseless gabble made me look out for a better position, and I was pleased when the driver said there was room on top; and when we were loaded for the journey there were six on top of the stage, with three inside and one drunken thing.

MINING BY HYDRAULIC PRESSURE.

In making the twenty miles from Yreka to Fort Jones we cross quite a range of mountains; and in our descent upon the west side we enter a most fertile region known as Scott Valley. To the lover of grand mountain scenery it is all that can be asked for—Shasta to the east, ever covered with snow; mountain upon mountain to the west; and at that date, the 15th of April, they were wearing their white caps. Scott River and its tributaries rise in these mountains; and the melting snow replenishes the streams during the entire season. The valley is not extensive, but is very fertile, and dairying and stock-raising are the chief farm pursuits. Alfalfa is grown in abundance, and that makes it a sort of little paradise for the bee-keeper. Gold-mining is no small pursuit. Nearly every stream has its placer mines.

My destination, and where I expected to find Mr. Levering and the bees, was the town of Oro Fino. In Spanish, "oro" means gold, and "fino" fine, or, as we would say in English, fine gold.

My stage-driver from Fort Jones to the end of my journey was a unique specimen of Irishman, wearing a big pair of green goggles, driving an old rack-o-bones of a white horse attached to a wagon tied up with so many bailing-wires that it was hard to tell if it ever had a color.

I found Mr. Levering at the little postoffice, to welcome me. The gentle morning breeze was toying with his whiskers, and there was a smile of welcome and a hearty handshake. Three-quarters of a mile further along I found the end of my journey. Uncle Tommy delivered myself and trunk safely, and I turned myself to the study of the surroundings.

Oro Fino is located in a little branch of Scott Valley, and is separated from the main valley by quite a range of hills. The contrast between this portion of California and the southern portion was very marked. While it was dry, even unto death, in the south, this location was green with growing grain and alfalfa, and the streams were purling down from the mountains. It was a real pleasant sensation to listen, at various wakeful moments during the night, to the music of the water. There was a hoarser roar as from a distant waterfall. This, I learned, was from the forceful hydraulic giants washing down the earth, and separating from it the precious metal. There were two of these mines within five minutes' walk of my new home, and the season's operations resulted in a product of some $20,000.

Oro Fino was at one time a rich mining camp, and between two and three millions of dollars has been taken out. The town once contained two hotels, two stores, a livery stable, saloons, and dance-halls; but it was discovered that, under the town site, was pay dirt, and the entire town was moved to lower ground; and now where the buildings stood there is nothing but the bare bedrock. The town suffered, however, for now there is no hotel and only one store. The glory of the place has evidently departed.

The method of mining is to wash off all the dirt from the bedrock. This muddy water is run through a long flume, the bottom of which is constructed so as to leave many creases crosswise of it. Quicksilver is turned in at the upper end in small quantities, and this finds lodgment in the creases. The gold, as it comes down in the muddy water, also finds lodgment, and, having an affinity for the quicksilver, the two form an amalgam. The mine is run for several months without a clean-up; the forceful stream of water from the giant nozzle is kept at work night and day and Sundays. Under a head of 300 feet pressure this stream of water will tumble over and over large boulders. If it should strike a man it would be instant death to him. I have put my finger on the stream at the outlet of the nozzle, and it feels as hard as a bone. Give the miner plenty of water and the proper pressure, and he can say to yonder hill, "Remove to yonder valley," and in a few weeks it is done.

I give your readers a view of one of these mines, with the streams in operation, also a view of the beautiful valley in which our bee-keeping operations will be performed for the season. In the foreground at the extreme right the reader will find a tall dead pine tree. The top of this covers a small portion of one of the gold-mines. The ground, covering many acres, is washed off to the bedrock; just below it are two white buildings. That is the location of our apiary. Further to the left, and below, the next gold-mine is located.

VIEW IN SCOTT VALLEY, CALIFORNIA.

The town is much scattered. The little church shows up quite prominently. When this photo was taken (in early May) the alfalfa-fields all through the valley were green and thriving; and, though every thing looked so beautiful, the people were complaining about prospective dry weather. They gauged their predictions by the amount of snow on yonder mountains. To insure a continuous flow of water in the streams the snow should cover the mountains at least two-thirds of the way down.

Our little valley is about 2600 feet above sea-level, and the snow often falls to the depth of six feet, and, in some favored localities, twelve feet. The latter means plenty of water for all the industries of the valley, which, of course, include our industry of bee-keeping. The reader has now quite an idea of our mountain home, and now for the next few Rambles bee-keeping will be the sole theme under consideration.

* * *

LARGE VS. SMALL ENTRANCES.

The Dovetailed Hive with Flat Cover; Raising the Cover to Prevent Combs from Melting Down.

BY W. W. SOMERFORD.

I see in GLEANINGS, Aug. 15, in "Seasonable Questions," by G. M. Doolittle, that the entrance question is so completely covered by Mr. G. M. D. that it can not last much if any longer. I will add, before it closes, for the benefit of extracted-honey men, and women too, who use the Root Dovetailed hive with flat covers, it is the *very best hive in the world*, to my notion, after trying the varieties in the United States and Cuba, to my financial regret. To perfectly ventilate said hive for Cuba and South Texas, where 100° in the shade is no uncommon thing, simply raise the cover and pull it back far enough for the grooved cleat on the end of the cover to rest on the front end of the hive, thus giving a wedge-shaped hole on each side of hive at top, varying in width from ½ inch to almost nothing near the back end of the hive. If ventilated thus, hives with flat covers (even though covers are made of stuff only ½ inch thick) will be perfectly safe to sit in any tropical sun, even when combs are full of honey in the top story. Then, you know, is the time they melt down —when full of honey.

On visiting a neighbor's apiary, a part of which enjoys the full benefit of the sun, at the beginning of August, the first remark was, "How do you keep your combs from melting down?" His reply was, "Well, I don't know. I haven't had any melt down yet that I know of." I replied, as the sun was scorching hot, "I'll bet all of those there have broken combs in them," and, sure enough, all of the fullest combs were down in a heap on the bottom-bars of the frames—a mess fit only for a solar wax-extractor in place of nice combs well filled with honey ready for extracting. I began to raise covers and pull them back, so as to catch end cleats on top of hives at *front end*, thus giving room for a small stream of air to pass between cover and top of frames, making all safe.

The friend in question remonstrated, saying the robbers would eat them up. I replied by applying the ventilating-process to so many that, if the robbers ate them up, they would have to eat them *all* up; and, to my friend's delight and surprise, the robbers did not try to eat them *all* up, nor any of them, for that matter. The flat cover is one of the best features of the Root Dovetailed hive, because it can be made cool in hot weather so easily, and warm in cool weather; no blocks or wedges to fuss with. The Root ten-frame Dovetailed hive with flat covers is what I used at Jaruco, Cuba, the winter that I took 2000 gallons of honey from just an even 100 hives in 60 days. I expect to beat that, now Cuba is free.

I can hardly keep off that Jamaica man Morrison, for running Cuba down and that little isle up so; for I know something of both places. I had four years' experience in Cuba.

Navasota, Tex.

* * *

HOW MUCH HEATING WILL MAKE FOUL-BROODY HONEY SAFE TO FEED?

Can we Afford to Extract Foul-broody Combs? Convenient Smoker-lighters.

BY DR. C. C. MILLER.

Your footnote anent the matter of destroying foul-brood spores by boiling, Mr. Editor, page 790, deserves very careful attention in the way of reply. It would be a serious matter if a number of colonies should be diseased because foul-broody honey had been fed to them after being heated insufficiently. Critic Taylor thinks 15 minutes' boiling is sufficient to make such honey safe, and you found foul-broody honey safe after being kept 10 or 15 minutes at 180°. We must be a little careful about making negative testimony go too far. Suppose that you and friend Taylor found no evil results from feeding infected honey that had been boiled 15 minutes. Suppose further that twenty others corroborated your testimony. Then suppose that five other men found the disease given by such honey after such boiling. Would you advise me to go by the testimony of the twenty-two or the five? Of the five I feel pretty sure, for the chances would be five to twenty-two that I should lose by feeding such honey.

You think it would be interesting to know whether M. Genonceaux found spores still alive after two hours and a quarter of boiling. I don't know what experiments he made, or whether any; but I think I can refer you to testimony from a trustworthy source as to experiments that will pretty well settle that it is not always safe to feed infected honey that has been boiled only 15 minutes.

In Dr. Wm. R. Howard's excellent little treatise on foul brood, on page 20 he gives Proposition VI., "That the vitality of the spores of *Bacillus alvei* is not always destroyed when exposed to a temperature approaching 212° (boiling-point) for 45 minutes." He put spores into tubes of liquid gelatine, and thrust the tubes into boiling water. The contents of the tubes would approach but not quite reach the boiling-point. Then he made trial cultures on potato. From the tube that had been in the boiling water fifteen minutes he got growth in four out of five. In the tube that had been plunged thirty minutes he got growth in one out of five; after forty-five minutes, one out of five. After fifty minutes, none.

With that testimony it would hardly be safe to advise less than fifty minutes' boiling.

Later, experiments were made on a more extensive scale by J. J. Mackenzie, Bacteriologist of the Provincial Board of Health, Ontario, Canada, the result of these experiments being quoted by Dr. Howard, page 42, as the work of "an exceedingly careful observer." Prof. Mackenzie saturated sterilized silk threads with a beef-tea culture of *Bacillus alvei* in which there was a large number of spores. The threads were dried, then heated in wax. Heated to 212°, there was growth in the different trials up to two hours' heating. No growth was secured from spores that had been kept at 212° for two and a half hours. Kept at 198° for two hours there was growth, but none after three hours.

While not inclined to dispute in the least that you may have safely fed infected honey that had less than fifteen minutes' boiling, with my present light I don't feel safe to advise any thing less than boiling two and a half hours.

A point of interest is that experiments made by Prof. Mackenzie satisfied him that there was no danger of foul brood from foundation, and also that no spores float in the air.

The spores will live for years. No amount of freezing seems to hurt them, but exposure to common air for 24 to 36 hours will destroy their vitality.

SALTPETER RAGS FOR SMOKER FUEL.

J. W. C. Gray says: "I have had lots of trouble in getting lasting fuel for my smoker," and asks me to tell how I prepare saltpeter rags for my smoker. With pleasure, friend Gray. I think it quite likely you mean that you have trouble in getting a lasting fire instead of lasting fuel. For lasting fuel, it is doubtful whether any thing easily obtained is better than sound hard wood cut up in small pieces. The objection is the labor of preparing it. Where trees are felled, or where wood is chopped at a woodpile, you can generally pick up chips that are all right. Such fuel will last a long time, and, after the fire is fairly started, it is not likely to go out if the smoker is all right.

If your fuel is *dry*, and your fire goes out without apparent provocation, the chances are that the holes in the bottom of your fire-box have become filled up. Clean them out. Even then it may not burn as freely as it ought, and it may be the holes are too small. Punch them larger, or get a tinner to do so.

But in case your smoker is all right and your fuel is all right, you are anxious to start a fire without the necessity of puffing your smoker a long time, watching to see whether it's going to go or go out, only to say, after you have waited what seems to be a long time, when you haven't any time to wait, "There! I do believe the old thing has gone out!" Of course, you know that, when you start out from the kitchen, if a good fire is going in the cook-stove a few live coals put into the smoker for a starter are fine. But if a gasoline-stove is running you can't have coals, and you may not want to light your smoker till you reach the apiary. In that case it is very nice to have something that will go for sure at the first touch of a match. Now I'll tell about the saltpeter.

I take a two-gallon crock (of course, larger or smaller would do), and throw into it a pound of saltpeter, then fill half full of water. Into this I put pieces of rotten wood or cotton rags. The wood must be allowed to soak for a day or so, but the rags may be taken out at once, or they may be left a month. If you use rotten wood for fuel, and wish to tell the saltpeter wood easily from the other, it's a good plan to throw a little red aniline dye into the crock. An old milk-pan with holes in the bottom, or an old colander, stands in the crock, and some of the rags are put into that to drain and dry. Next time I come for saltpeter rags I take them out of the colander, put some out of the crock into the colander, and put some new ones into the crock. If none are dry enough I dry them in the sun or stove-oven. When I want to fire my smoker I take a rag, perhaps a piece of an old shirt or dress, the size of my hand (I don't mean the dress but the rag is the size of my hand), touch a lighted match to it, roll it into a little ball, and drop it into the smoker. Then, without waiting to see whether it will burn or not, I fill up the smoker with chips, planer-shavings, or what-not, with no fear but there will be a good fire with a very little puffing.

Marengo, Ill.

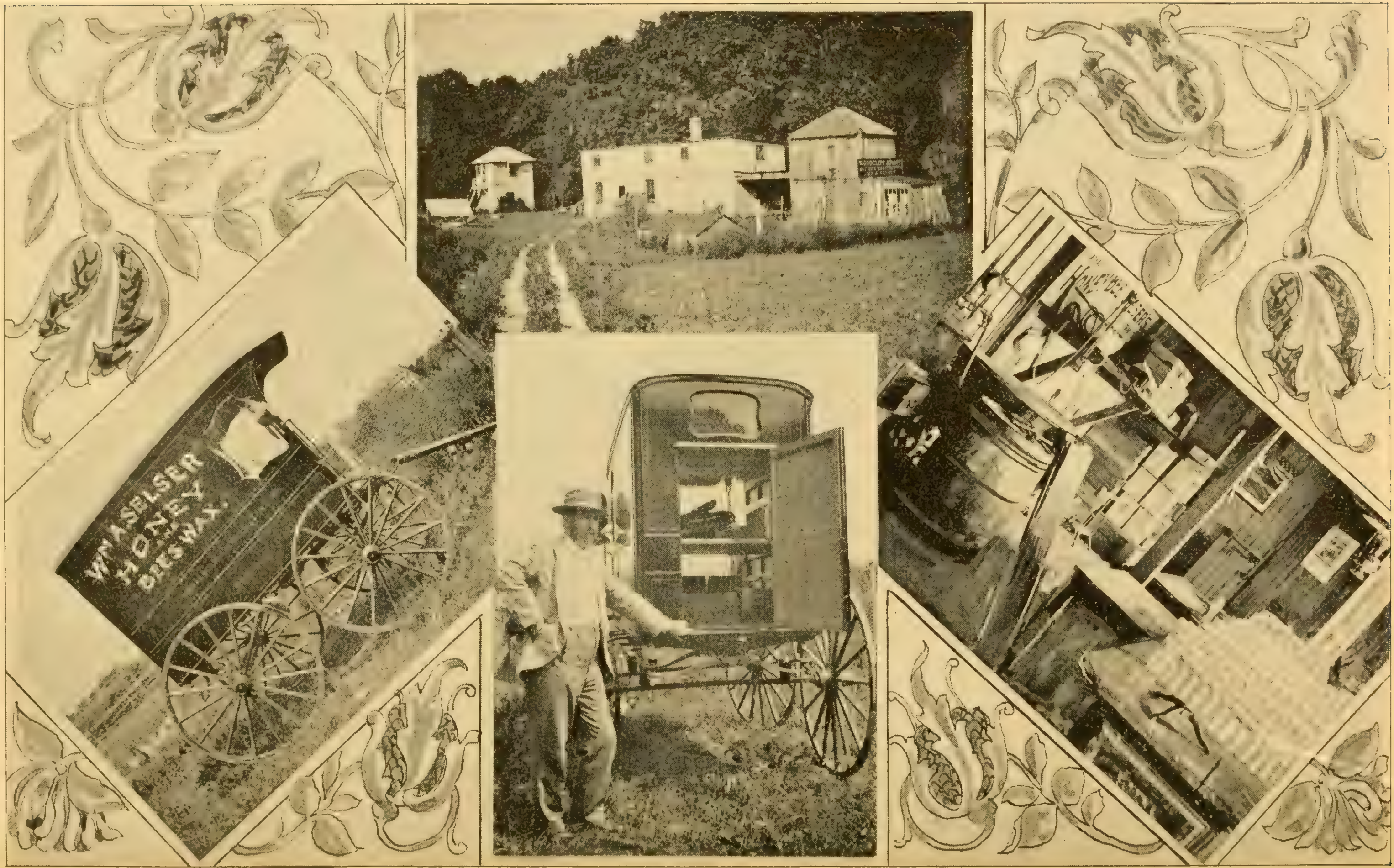
[I grant that it *looks* as if honey affected with *Bacillus alvei* must be boiled at least 45 minutes; but in each of the experiments mentioned it was not possible for the heat to act directly and promptly on the microbes. It would take possibly ten minutes before the gelatine in the test-tube would reach the boiling-point, and it might take longer. Again, gelatine, as its name indicates, is a thick syrupy liquid, more so than honey, and would, in my opinion, take longer to heat than a liquid as thin as water. Honey, however, that is put into a kettle, is raised from the temperature of the room gradually to the boiling-point, sterilization commencing to take place at once. Now, if it were boiled ten or fifteen minutes, would it not receive the same sterilization as the gelatine in the test-tube plunged into boiling water and kept there for 45 minutes? But after taking all of this into consideration, science still seems to be at variance with practice. Has there ever been a case recorded where infected honey brought to a boil, and kept there for five or six minutes, gave rise to the disease in a colony to which such honey had been fed? If there has, I do not remember it. R. L. Taylor, D. A. Jones, ourselves, and scores of others, have fed diseased honey that had been brought to a little more than a boil, and yet, so far as I know, the disease did not appear in the colonies fed with such honey. It is very possible that I am mistaken; and if I am, I wish that those bee-keepers who have tried feeding honey boiled not more than four or five minutes, and experienced bad results, would hold up their hands.

This is an important matter, and we can not afford to make any mistakes. If there is just *one* bee-keeper who has found that five minutes' boiling is not enough, then we ought to advise boiling for at least an hour to make sure.

Personally I see no need of feeding back honey that comes from an infected colony. There is great danger of exposing such honey to the bees during the process of extracting; and my advice is, and always has been, to burn the combs, brood and all, even if some of the combs are nicely filled with honey. But suppose there were no danger in extracting the honey, there is the cost of the labor; and this, taken in connection with the fact that boiled honey, especially if it be boiled *an hour*, would be of inferior quality, the amount saved per colony, after all expenses were deducted, would be insignificant. The average colony would not contain over 10 or 15 lbs. of honey. The cost of extracting this honey, *just one colony alone*, and messing up the extractor (not to mention smearing it over with deadly microbes), could not be much less than 25 cts. Then the honey that was boiled for a whole hour would be dark in color and off in taste. Such honey might bring 4 cts., but more likely not more than 3. This honey at 3 cts. would make 45 cts. Subtract from this the cost of extracting the one colony, 25 cts., and the cost of the package, how much money would be left? If the *whole apiary* were infected with foul brood, then the case might be different.

I saw Dr. Miller light one of his saltpeter rags with a match. It seemed to me it had "gone out." I remarked, as he crammed the rag down the smoker and more stuff on top of it, "You will get no fire out of that." "Oh! that's all right," and he crammed in more rotten wood and planer-shavings, and commenced to work the bellows. After about half a dozen whiffs the smoke began to pour out. "Those saltpeter rags always light and stay lit," said the doctor.

It seems to me no bee-keeper could afford not to have such smoker-lighting material on hand, and plenty of it. The labor it would save would more than make up for its slight cost. Sometimes when I want a fire in a smo-


Wm. A. SELSER
HONEY
BEESWAX.

SELSER'S HONEY-BOTTLING WORKS, HONEY-LABORATORY, AND HONEY-WAGON.—SEE EDITORIALS.

ker in a hurry, and proceed to light it in the usual way, I find the thing has "gone out" just when I need it the most.—Ed.]

VISIT AMONG THE BEE-KEEPERS.

At Hutchinson's and Taylor's.

BY H. R. BOARDMAN.

Continued from page 835.

At Judds Corners I wheeled up to a country store to take a few minutes' rest. Some nice honey on the counter attracted my attention at once.

"Can you tell me," I asked, "who brought this honey?"

"Oh, yes! Dr. Smith. He's a scientific bee-keeper. He lives just up at the second house."

A few minutes later I was talking with Dr. Smith as familiarly as if we had been acquainted for years. Not a moment was wasted in compliments or apologies. Dr. Smith is an intelligent, progressive bee-keeper who takes pride in doing every thing just right. He keeps about 25 colonies of bees, as he said, partly for the diversion but not wholly for the fun of the thing, as he was trying to make it pay. He had a small shop with some kind of power where he made his own supplies. Dr. S. insisted on showing me his honey, which was already filled into neat cases. "And now," he said, "I want you to show me how to grade my honey *properly*. I want to do every thing *right*."

Then he commenced prying off the covers to the cases, and taking out the honey.

"Well, Dr. Smith, I can show you how to grade your honey according to the Washington rules, but I do not grade my own that way. I see you do not use separators," I said, as I commenced grading the sections back into the empty cases. "Do you think you can make it pay to dispense with separators?"

"Yes, I think so. I think the bees will go into the sections more readily, and more surplus be secured, without separators than with. The sections will be fuller and heavier, but 7 to the foot should be used instead of 6."

"Well, doctor, I am a little surprised at this. I had supposed this method was obsolete. I think you will change your mind after a while;" and while busy talking he pulled up a section with a fat side, and stripped off the delicate cappings against the next section.

"There, doctor, you have yourself furnished me with one of my best reasons for using separators. If you and I, with our skill and care in handling this honey, make such mistakes as you have just made, how about the busy retailer who pulls up the sections in a hurried, careless way to show to his customers? Of course, he will be sure to do the same thing that you have just done. The honey will leak and become untidy; the dealer will be disgusted with it, and, may be, lose his patience, and declare in forcible language, perhaps, that he doesn't want to be bothered with any more of the leaky stuff, and a good customer is lost. Then I see you have some sections so irregular in shape that they will not go in at all."

"A very few," he replied. "I set those aside and sell them at home, and there is really not much loss on them. But you said you did not grade your own honey by the Washington rules."

"No. I have an established method of grading my honey, which I have followed for years. My principal customers are familiar with my methods, and I did not consider it the part of wisdom to make any change in my methods of grading; besides, I think I really *like my way better*. I make but two grades—1st and 2d—putting the fancy and No. 1, if of pretty good grade, into my 1st grade."

"Would you put the nicest sections on the outside?" asked the doctor, again.

"I face my cases with the very choicest sections in the grade I am making; but the rest must give entire satisfaction to my customers for whom I am grading it."

Notwithstanding the doctor did not use separators he secured a fair crop of very choice honey. I was greatly surprised to note how swiftly the time had glided away during this interview which I had intended should be but very brief; and without an apology, and almost abruptly, I broke away and wheeled on toward Flushing, where I brought up for a lunch at a restaurant, after a very warm ride.

The first thing that attracted my attention was a showcase filled with dark inferior honey.

"The farmers bring it in," was the reply to my inquiry. "We pay 8 cts. and sell it for 12."

At several of the groceries that I visited hurriedly I found about the same thing. Those near me at the lunch-table stared in amazement as I ordered and drank only hot water that hot day while everybody else was drinking iced tea, iced lemonade, and iced water to keep them cool.

After a brief call on another bee-keeper in the suburbs of Flushing I again set my face as a flint Flintward, and wheeled along the pleasant banks of the Flint River, and in due time reached that town without further incident.

I found W. Z. Hutchinson in his sanctum, "reviewing." After reducing my temperature a little with ablutions of cold water, I commenced helping him to "review." After supper he took me out into the yard and seated me in a hammock where the bright moonshine trickled down through among the leaves and branches of some overspreading trees, and we continued to review every thing in beedom that we could think of until pretty late bedtime.

The next morning Mr. H. showed me some honey of fine quality produced by Mr. Koeppen, a progressive and successful bee-keeper of Flint, and also called my attention to some 7-to-foot sections of honey produced without separators, that were quite attractive. While considering a visit to Mr. Koeppen, Mr. R. L. Taylor's name was mentioned, and immediately placed on the program for the day.

Mr. Hutchinson kindly consented to accompany me on the visit.

A ride of 20 miles on the cars brought us to Lapeer, the home of Mr. Taylor—a home of beauty and loveliness. We were royally entertained at the dinner hour, then taken to the apiary, the garden, vineyard, and farm. Mr. Taylor takes just pride in his fine fruit as well as in his apiary. He reports a fair crop of comb honey of good quality.

A vigorous three cornered conversation filled up all the time for an hour, when we took leave of the Taylor home and hastened to catch the returning train at the depot, not without some regrets that the time had been so short; yet many were the crumbs of wisdom that I had been able to pick up from Bro. Taylor's experiences. The events of the day furnished interesting topics for a busy conversation on our return trip, and, with much regret, I parted company with Mr. Hutchinson at Flint, and continued my journey to Owosso via Durand. My most ardent anticipations have been realized in this visit to these two prominent bee men.

* * *

MAKING HIVES BY HAND, FALSE ECONOMY.

An Interesting and Laughable Experience.

BY GEO. L. VINAL.

Another season has rolled from off the calendar of life and bee-keeping, and we are again to think of supplies for next season. R. L. Taylor, the critic, thinks one can not afford to keep many bees unless he builds his own hives. I for one do not or can not agree with him.

Last fall I thought I should want about 20 two-story chaff hives, and, looking over your catalog, I found they would cost me about $35, and I should have them to put together. As A. I. advises to be always economical, I practiced it and constructed hives myself, as on paper I could do it for about $15. I first purchased about 1000 feet of boards for $12, at the lot where they were sawed. I gave $2 to have them carted to my place. I had to purchase saws, planes, hammers, squares, bench, vise, and other tools, to the amount of $18 (but that is an indirect expense). I told the man who carted the boards from the lot to take them to the mill and have them planed. As he did not, I had to have them carted to the mill and back again at an expense of $3.50 more. I told the head man at the mill to plane them just ¾ of an inch thick. When I got them they were ⅝; cost of planing both sides, $2.00.

After I had piled them up nicely I commenced business. I got out material for one hive and put it together. It took me two days and a half to finish it; and when I got it done it was a "beaut—." I came to the conclusion that the winter was too short to finish the rest, and I would use machinery.

Going to the mill I found I could get the use of a saw and table for 40 cents an hour; so, cutting the boards into lengths according to the A B C book, I went to the mill; and as it was the first time I had ever used a circular saw you can imagine the progress I made; but with the help of the foreman I got started, and had worked about an hour when, somehow, as I was sawing off a strip, the board caught and came back "zip!" hitting me a crack on the nose. I thought my head was gone. The men in the mill had a good laugh, and I had a good pair of black eyes. I got at work again, and eventually finished sawing out the bodies. From the pieces left, I got out some material for frames and some division-boards; in fact, I worked the boards all up. When I got through I went to settle, and the following is the bill presented. Use of saw 21½ hours, $8.60; time of foreman changing saws and gauging the same seven times, $3.50; cartage to and from the mill, $2; ten pounds of nails, 50 cents. I got the hives put together before spring. The total cost was $34.10, leaving a balance in my favor of 90 cents.

I think I have a fair amount of intelligence, and some mechanical skill; and as I sit under the shade of a large maple-tree and look at those hives with their open joints, lop-sided wapper-jawed covers, I view them as mementos of my economy and industry, and rejoice that I have saved 90 cents. If putty is not very high I think I shall come out about even with what I should have done had I purchased of some reliable dealer.

Charlton City, Mass.

[I suppose I ought to keep still, because to some, at least, it will appear, in spite of any thing I may say, that I have an ax to grind. Well, I do not care; I am going to tell what I honestly believe to be the actual truth. Mr. Taylor has stated his position, and Mr. Vinal his, so here is mine from the standpoint of a supply-manufacturer—not because I am interested in the dollars and cents, but because I have read over just such experiences as these so many times, and traveled much.

If I have read one such letter as this, I believe I have read hundreds. Why? After one has tried his hand at making his own hives, spoiled a lot of good lumber, perhaps sawed off a thumb, or done something worse, he concludes to buy the stuff already made, of those who make it their business, and usually he is good and kind enough to tell his supply-man his experience, and that he has had all he wants of making his own supplies.

Now, here is what I regard as a fair statement. A natural mechanic can, many times, buy his own lumber, make his own hives and other supplies, and save money; but in order to do so he must keep quite a complement of nice machinery; for I assume that no one can afford to fuss with a handsaw—that is, providing he regards his time as worth ten cents an hour. But where there is one handy at tools there are fifty bunglers. There are a few men, perhaps, like R. L. Taylor, Dr. G. L. Tinker, the late Miles Morton, Capt. Hetherington, G. M. Doolittle, and others I might name, who can make a success of making their own hives; but even Mr. Doolittle, who is a nice mechanic, and still does a good deal of his own work, told me that, if he had to do it over again, he would not think of buying an engine, keeping buzz-saw machinery, and trying to do it himself, as he could better afford to buy what he needs, and save the interest on his investment. But there is the case of Capt. J. E. Hetherington. The shipping-cases that he has made will equal the work turned out by any supply-manufacturer in the country; and although I have not seen his hives, I assume they are equally well made. He operates thousands of colonies. He is a large consumer, and can well afford to make his own goods; but another man operating an equally large number, and not a natural mechanic, had better let the buzz-saw alone; it's loaded, and liable to do more things than "hit between the eyes."—Ed.]

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

WHICH WAY SHOULD COMBS GO INTO THE HIVE?

Question.—Will you please tell the readers of Gleanings why most of the apiarists of the country have the frames of their hives run lengthwise of the entrance? I have observed, when taking bees from trees, that the combs run crosswise of the entrance; also, in removing a colony from a box hive, that the combs were the same way of the entrance that they were in trees, especially those which come the nearest to the entrance. It would seem that, if the bees place their combs crosswise of the entrance, it would be right for us to do the same. Would it not? It would also seem as though the hive would be a great deal warmer for wintering if the frames were crosswise, as the draft, if any, would pass under the combs and not through them.

Answer.—If our questioner has had any great experience in cutting "bee-trees," or in transferring colonies from box hives, it would seem strange that he found the combs in *all* such colonies running crosswise of the entrance; for in the cutting of a dozen or more bee-trees, and in transferring bees from box hives by the score, I have found by careful observation that the bees built their combs at any and all angles to the entrance, where there was nothing in the tree or hive in the way of some little projection to start them to building their combs in a certain direction. Where there is some little projection of wood downward from the top of the hive or tree, having a knife-like edge, the first comb is almost sure to be started on that; and "as runs the first comb, all the rest are likely to follow," unless, perchance, there is some other like projection running angling, or in an opposite direction from the first started on, in which case the combs are likely to run in any and all directions throughout the tree or hive. So if, in a multitude of colonies, each having nothing by the way of a guide to start building comb on, it is found that the combs run in any and all directions (as has been my experience and that of others who have done much transferring, with whom I have conversed on this matter), "it would seem" that the bees have no rule by which they build comb, as regards which way it goes to the entrance. If this is right, then we must conclude that nature has no choice in this matter, and hence we are at liberty to do as we please, unless we have better reasons for running the combs one certain way of the hive instead of any other. And this brings us to the question, "Why do most of the apiarists of the country have the frames of their hives run lengthwise of the entrance?"

I think this question has been discussed at some length during the past; but just what the argument was I am now unable to tell, and have not the time to hunt the matter up, so I will answer by telling why I have my combs run thus.

First of all, if our bees are to thrive, the water from rains and snows should not be allowed to go inside of the hive any more than they should be allowed to run all over the floors of our houses in which we live. In our houses we have nearly tight-fitting doors, and under them a threshold, the latter being being made of the right shape and with the right pitch so that all water which blows or falls against the door or side of the house is impelled outward, thus keeping the floors of the house dry all the while. But with a hive it is different, for the "door" (entrance) to the hive must be all the time open for the going to and fro of the bees, and to provide air for their health and existence; hence no door with a threshold can be well made so as to exclude all water, where the hive is set perfectly level each way, as is a house. Hence to overcome this *water* matter we set the hive on an incline, or give it a "pitch" toward the entrance, so that, should any water beat in there, it would immediately run out and away from the habitation of our pets.

Well, what has this to do with the matter of which way the combs run? Much, every way, for nature has so ordained that the bees always build their combs perpendicular, or "plumb," as we generally say; and so if we have the hive tip or slant toward the entrance, in order that the water can run out, and at the same time have the frames run crosswise of the entrance, the bees, in building their combs, will start right at the top; but in going downward, in a perpendicular direction, the bottom of the first comb next to the entrance will strike the side of the hive before it comes to the bottom of the frame, and all the others will have their bottoms over in the next frame, thus making the combs not interchangeable, even should they be considered movable. But where the frames run with the entrance, the hives can be leveled crosswise of the entrance, no matter how great the pitch the other way, and all combs will be built true in the frames, and, after being built, there will be no swinging toward the entrance, thus having the bottom of the first frame glued to the side of the hive, and many of the others glued together. Then the most of bee-keepers prefer to have their sections run the same way that the combs in the hive below do; and if so, the bottom of the foundation in the sections is swung to one side, where the hive is inclined toward the entrance, which causes bulged and irregular combs in the sections, which hinders the proper crating of the same, and unfits them from being in the most marketable shape. And even where only starters are used in the sections, the matter is not helped any; for in the filling of the sections with combs we should have the same trouble to contend with we did in the filling of the frames.

Then, again, our questioner seems to be thinking only of wintering bees when he asks the questions, as his "great deal warmer for wintering" implies. I am free to admit that, if bees die in winter, we shall have none to be of use to us during the summer; but if we can manage to winter bees equally well with the combs running lengthwise of the entrance, thus having them ready for the summer's work, may it not make much difference with us then as to which way the frames run in the hive?

I think the questioner will be free to admit that what will make "warmer" in winter will also make warmer in summer, and hence we find that, with combs running crosswise of the entrance the bees are not able to do nearly so good work at ventilating the hive, by way of the entrance-fanners, as where the combs run the other way.

Again, where the combs are lengthwise of the entrance the bees returning from the field can run up between any range of combs they like; while where they go crosswise it tends toward the massing of many bees on the first one or two combs, so that the nurse-bees have more trouble in taking the loads of nectar as they come from the fields. There are other minor reasons which might be given, but I think the above are sufficient to answer the question as propounded.

A fly had fallen into the ink-well of a certain author who writes a very bad hand. The writer's little boy rescued the unhappy insect and placed him on a piece of paper. After watching him intently for a while the child called to his mother: "Here's a fly, mamma, that writes very much like papa." So, I mistrust, if any of the older readers of GLEANINGS should happen to read the above reply to the questioner they will find it "very much like" what they read in former years when the discussion regarding which way frames should run to the entrance was on.

POOR SEASON.

This season has been very poor, taking it as a whole. My crop of white honey from 68 colonies was 200 lbs., comb. My crop of dark honey is 1700 lbs. of extracted and 300 lbs. of comb. I increased my yard from 68, spring count, to 77 fall count. This is a rather poor season, but I can not get along without GLEANINGS. CHAS. B. ALLEN.

Central Square, N. Y., Oct. 27.

HEADS OF GRAIN FROM DIFFERENT FIELDS

HONEY-PAILS AT ONE-HALF CENT PER LB.

As the price for honey gets lower every year — barring poor seasons like the present one— it is an item of interest to producers of extracted honey to know what is the best and cheapest honey-package Glass is too heavy and fragile, as a rule, for large packages. I have lately tried 9-quart tin buckets, costing 12 cts. apiece by the dozen; and as I can easily put 25 lbs. of extracted honey into a bucket it costs me only 5 mills per pound to put my honey into marketable shape. Then when it candies it can be "dug out," or liquefied by setting over a fire. But you will say a customer rarely buys 25 lbs. of honey at one time. Then pour out or remove what he wants; or, better still, if he is known to you to be perfectly reliable, leave the package, after ascertaining its weight, and allow him to pay for what is consumed. It will generally sell your entire bucketful if the honey is ripe and of good flavor. Charge 10 cts. for the bucket (it retails for 15), and your honey will then cost you a mill or less for handling. If any one can go me *one better* he is my friend if the subject is explained in GLEANINGS.

The next package I shall try will be one-pound jelly-glasses, for the retail merchants and small customer. I shall fill my glasses to within one-sixteenth of an inch, or thereabouts, with honey, then pour in melted paraffine until it is brimful, when the tin cover will be carefully slipped on and the paraffine allowed to harden, making the package air-tight, insect-proof, and easily handled. A pound package thus prepared I think will retail at 15 cts., or wholesale to dealers at 12½. I believe tumblers can be procured at 2½ cts. apiece, which allows the producer 10 cts. per lb. for his honey — the price in our market. CHIP HENDERSON.

Murfreesboro, Tenn.

THE WINTERING OF TWO NUCLEI IN SINGLE-WALLED HIVES.

These are the days when the thoughts of bee-keepers turn to the subject of wintering, and any thing will interest that throws light on it. For my part I am especially interested in any thing on outdoor wintering, though most of my wintering is done in the cellar. I will relate a curious thing that happened in my apiary during the winter of 1885. In the spring of that year I bought some bees in hives that had frames about two inches shorter and as much deeper than the Langstroth. These I transferred in the latter part of May or first of June to L. hives. In cutting out the combs I left a strip about two inches wide in the top of those frames. These strips contained mostly honey, some bee-bread, a little brood, and a few eggs. Two of those hives, containing such strips of comb and a few bees, I set back against a wire fence and left them there all summer. Queens were reared from eggs left in each, and both succeeded in getting laying queens. During the summer the middle combs were built down nearly to the bottom-board; but those on the sides were scarcely touched, the hives in the fall not being half filled with comb, and contained only small nuclei and but little honey, as the season had not been a good one. I regarded them simply as old empty hives for which I had no use, and left them where they were all winter, with no protection.

Both wintered ; and during the summer of 1886 both built up to good strong colonies, filling their hives with full combs well supplied with honey. That winter I protected them by packing the same as I did my other stock, and the next year both were rousing good colonies, and cast early swarms.

This is a true story. The history of bee-keeping is full of such stories, but they do not aid us very much in solving the wintering problem. Can any of the wise ones explain why such small nuclei should have withstood the storms of winter, and retained such vigor? Perhaps some will say it was because there was plenty of room (open space) below the cluster. I am inclined to think that way myself. HARRY LATHROP.

Browntown, Wis., Nov. 14.

BEES BY THE BAGFUL.

I recently made a visit to Mr. D. L. Shangle, of Midland Co., Mich., and during my very interesting visit with him I learned one thing I thought might be interesting to some of your readers. Mr. Shangle is a great bee-hunter, having found as many as 52 swarms in one season. The night I stayed with him he came home a little after dark, having cut two bee-trees that day. Nov. 2d he came into the house with a bagful of something that made a great buzzing. On inquiry I found it was a two-bushel bag filled with bees, with a screen bottom to give them air, and also to feed them if he kept them confined any length of time. When he cuts a bee-tree he runs the bees into this bag, then they are in a convenient shape to carry ; takes them home, and hives them on combs full of honey, which he has saved for the purpose. He has about as good luck wintering this class of swarms as he does those that fill their own hives. He says he can move bees much safer in hot weather by driving most of the bees into a bag, thus relieving the crowded condition of the hive, and returning them to the hive they were taken from, after the journey is made. N. E. DOANE.

Breckenridge, Mich.

REPORT FROM UTAH.

While a few of our bee-keepers have had unusually large crops this season, the rule has been from two-thirds to three-quarters of a crop. I have just read Mr. Vangundy's report from Vernal, on p. 803. He is one of the lucky ones that I referred to. The highest I have heard of in the State is nearly 5½ tons of honey from 31 colonies, increased to 82. How is this in a year when the greater portion of our bee-keepers have had poor crops?

Salt Lake City, Nov. 6. E. S. LOVESY.

PLAIN SECTIONS WELL FILLED.

I have been trying your plain sections this season, 4¼x4¼, and 5x4. Both were well filled. I like the looks of the tall ones. I used the Danzy crate and fence.

J. W. SPENCER.

Atworth, Melksham, England.

BEGINNERS' QUESTION BOX BY E. R. ROOT

F. B., Quebec.—Any extra supers of combs you may have taken off colonies prepared for winter should be set out of doors on the regular hive-stands. Entrances should be closed to keep out the mice. Freezing temperature will destroy both the moths and their eggs. If these hives are made bee and mouse tight you will not be troubled with moth-worms during the next season ; but if the hives are open to moth-millers, there is danger of moth-worms. It is our practice to store combs in winter in hives out of doors, or in buildings bee-tight and subject to freezing temperatures. The combs are not disturbed until we want them the following summer.

C. W. W., N. Y. — First. The matter to which you refer, of bringing a colony from an outyard or from a mile or more distant, and then dividing it after it is placed in the home yard, is a very good way of forming nuclei—the very best, in fact, but it is not always practical or convenient to do this. Second. Yes, we use full sheets of brood foundation in our frames for our newly hived swarms. Some use merely starters, and prefer them, and in some localities it may be the better practice. Third. Some prefer using a single half-depth brood-chamber in which to hive a swarm. The plan seems to work well with some bee-keepers and in some localities. The majority, however, hive in full-depth brood-nest.

J. P. C., Mass.—Yours at hand in reference to foul brood. There is no question that you have had the disease, from the description given. For full particulars regarding treatment we would refer you to our foul-brood pamphlet. If you follow the treatment you will be able to wipe out the disease, without any doubt. We would not advise you to brimstone any of the bees. You can save the honey—every thing except the combs and the frames ; but, of course, the honey should be brought to a boiling-point and kept there several minutes to kill the spores. As to the length of time it takes for the spores to develop into *Bacillus alvei*, no one knows—probably within two or three months, possibly less. They may also lie in a dormant state for years, and develop only when favorable conditions arise.

EDITORIAL
BY
E. R. ROOT

COLD weather came on over the country generally much sooner than was expected. I wonder how many had their bees all in winter quarters.

THERE has been so much inquiry regarding fences for 1899 that I have decided to have a sort of symposium on that subject in our next issue. This will give various constructions, together with suggestions and criticisms.

THOSE WORDS ABOUT WORDS.

I HAVE just received a letter from a prominent and influential bee-keeper, referring to the discussions regarding the use of words. The writer gives it as his opinion that this matter has gone about as far as it is profitable, and that if it continues much longer it is liable to degenerate into dispute and personalities. I believe my friend is right. It is somewhat a question with me whether any good has been accomplished; at all events it is safe to say that there would be nothing gained by a further continuance of the discussion, for bee-journals are published primarily for the instruction they give on *bees*. So far as I am concerned the other fellows can have the last word.

THE APICULTURAL EXHIBIT AT THE RHODE ISLAND STATE FAIR; DIFFICULTIES IN JUDGING EXHIBITS.

I HAVE just received a letter from my friend A. E. Potter, Edgewood, Pawtuxet, R. I., inquiring why I had not written up my visit of a year ago to Providence, and more especially that part of it spent at the Rhode Island State Fair, and at the Rhode Island Bee-keepers' Educational Society. I fully intended to do so, but as the time went on I overlooked it till the letter above arrived.

In the summer of 1897 I received a very pressing invitation from Mr. Potter, who is one of the active and influential bee-keepers of Providence, to attend the Rhode Island State Fair. He also stated that it was the desire of the management that I act as judge of the apicultural exhibits. As I was expecting to make a trip east I saw no reason why I could not accept the invitation. And to be a *judge*, that would be delightful. Accordingly, at the appointed time I reported for duty. After receiving my credentials I undertook the job with pleasant anticipations; but, unfortunately for the judge, the exhibits were of nearly equal merit, and I realized as never before the difficulty of apportioning first and second premium among one's friends, although friendship should not and did not in this case influence the decisions. I remember particularly that there were two exhibits of about equal merit, and yet only one could have first. Both of the exhibitors were my particular friends. To give one man the first and the other the second would be an injustice to the latter; and yet, what could I do? If I could have had two other judges with me, the task would have been more easy.

To make the situation more complicated, one of the men had ordered from us one of our best queens to compete for the first premium. I was aware of the fact; and even if I had thought our own queen was the best one of the lot, I would have hesitated to give her the first premium under the circumstances. But the wording of the premium-list let me out, as it specified beauty as well as other qualities. As the queen we had sent was imported, and not particularly striking in point of beauty, I gave the palm to a handsome five-bander.

After I had decided on my firsts and seconds by making a schedule of points, I proceeded to the still more delicate task of tying on the premium-cards in the presence of the competitors. Fortunately for me, they all accepted my decisions very kindly; but I know that, if I had been one of them, and had had an exhibit that I thought was just the equal of the other fellow's, and perhaps a little better, I should have believed the judge was impartial or unfair.

How often did I wish for the advice and counsel of that veteran judge, Eugene Secor!

After the awarding of premiums we had a little informal convention of bee-keepers in the evening—an association that goes under the euphonious title of the Rhode Island Bee-keepers' Educational Society. It does or did meet once a month, and its members occasionally call in some outside bee-keeper to address the meeting. On this occasion your humble servant was given the question-box—a task I found much easier than judging exhibits.

The bee-keepers of Rhode Island, especially of this association, are a progressive and jolly set of fellows. I shall not soon forget their cordiality.

Moral: When you are asked to act as a judge of a honey exhibit, and don't know any thing about the business, take my advice—"decline with thanks."

SELSER'S HONEY; CREATING A HOME MARKET; BOTTLING HONEY.

THE latter part of August found me on a train going from Seagirt, N. J., near Asbury Park, to Philadelphia. As the train whirled into the big city—the city of Brotherly Love, so named by Wm. Penn, the city so rich in American history, the city where the old liberty bell proclaimed the independence of the United States, and a hundred years later had the Centennial—I fell to wondering whether the political strife then nearing its height would finally end in brotherly love. But politics didn't bother me that morning. I sought No. 10 Vine St., where the Root Co. has an office, and W. A. Selser is its manager. Should I find him in? Following the directions given me, in a short time I found myself in what seemed to be the busiest part of the city, near the docks, and amid the burly bustle of crowd and dray. Yes, there was No. 10, and, stepping inside, I asked for Mr. Selser. "He is in, sir." I was directed to go up that pair of stairs, and then turn to the right and then to the left. I did so, and suddenly found myself in the presence of Mr. Selser the honey-man, busy at his desk. He had not expected me, and explained that it was a mere accident that I had found him at his office at all at that time of the year. After chatting a little we went up into his spacious wareroom where familiar objects in the shape of Root goods were shelved on every side, all ready for immediate delivery.

After talking over matters of business Mr. Selser proposed that we take in some of the sights, and then we would go to his home, where were his bees. We visited old Independence Hall, and looked at the chairs in which our famous forefathers had sat. We then went to the United States mint, where they were rolling out gold and silver dollars of Uncle Sam's money. There were some enormous bricks of gold right from the Klondike ; and as we stepped from one apartment to another we saw this gold and silver worked over, and rolled out of the stamping-machines into coin. Silver dollars—there were bushels and bushels of them, but—they didn't belong to me.

Next we went to Cramps' shipyard. The St. Paul, which had, under Captain Sigsbee, so lately distinguished itself, was preparing for dry dock. After we stepped aboard we were shown the 6-pounder that had sunk the Spanish torpedo-boat.

After we had dined at Wanamaker's (a department store that is almost a world of itself) we made a visit to some of the large retail and wholesale groceries of the city, and inquired for honey. Yes, Mr. Selser has supplied all of these places with his honey. It was genuine bees' honey, and of the very choicest quality. In some places, alongside of it were some adulterated goods, or what appeared to be such, but Mr. Selser was confident he could compete against this honey by winning a name for his goods, and he certainly was doing it.

After we had looked at the bottles of honey we boarded a suburban electric car for an eight or nine mile ride to Jenkintown, where Mr. Selser lives, and where, indeed, his bees are kept. All the way along Mr. Selser pointed out signs which he had put up here and there, "Selser's Honey-bee Honey." Sometimes they would be torn down, but usually he was successful in putting them in places where they would stick. On we sped on the electric till we passed the beautiful place of John Wanamaker. A short distance further we stopped in front of a new and beautiful residence, the home of Mr. Selser. Near the front was a lawn hive bearing Mr. Selser's sign, "Bees and Honey." This sign we gave in GLEANINGS on page 46, current volume.

That same evening, as I have already explained, some thirty or forty bee-keepers assembled for an informal convention; but as I have already referred to this before, I will not speak of it further here.

The next morning Mr. Selser and I followed a path that led out through a beautiful grove, on the other side of which was Mr. Selser's apiary, his laboratory for analyzing honey, his office, his building for bottling honey, and his barn. Elsewhere in this number, p. 878, in the center view at the top, is shown a view of the three buildings just named. The small square building at the left is the laboratory ; and in the second story of this Mr. Selser has some of the very best and latest apparatus for testing and analyzing honey. The large building at the right is Mr. Selser's bottling-works. At the right of the picture will be seen an interior view of one of the rooms. The table at the right shows a lot of Muth jars ready to be filled. In the foreground is a barrel of honey, and in the rear of that a large steam caldron, or melting-vat. Several lots of honey are poured into this vat, and if there is any that is candied it will soon be brought to a liquid condition. When it is heated just enough to prevent candying for a reasonable length of time, and yet not affect its general flavor, it is poured into Muth jars, and sealed while hot.

I do not dare to tell of the large quantities of honey Mr. Selser buys and puts up in small packages after this fashion. When I tell you he takes the product of several large apiaries, you may know what a business he is doing. After he has a large supply of bottled honey he loads up his honey-wagons, as shown in the lower portion of the picture, and starts out to supply the trade. He even goes as far as New York — in fact, has quite a trade in that city, that he keeps regularly supplied.

Although there is a great deal of work connected with bottling up honey in such small packages, yet Mr. Selser makes it pay; but he has every thing on a sufficiently large scale to enable him to do the bottling cheaply.

When I asked him why other bee-keepers couldn't dispose of their honey in a similar way he shook his head "The margins are close," he said, "and one has to be well equipped, and work on a sufficiently large scale to do it cheaply enough to secure a fair margin; and then, too, many are careless regarding the quality. Only the very best should be put in glass."

Mr. Selser objected to being kodaked in the rear of his wagon, but I told him to stand up and face the gun. I wanted our readers to get a view of him in his everyday clothes, equipped ready for business ; and there he stands—see page 878—beside his wagon, ready to sell you a gross of Selser's fine bottled honey.

IS THE UNITED STATES BEE-KEEPERS' UNION IN THE TRUST BUSINESS?

IN an article appearing in the *Modern Farmer and Busy Bee*, published by E. T. Abbott, I find the following paragraph from an article by Wm. Stolley, Grand Island, Neb.:

> It was suggested by some parties in whom I place confidence, that our Bee-keepers' Union was looked upon with suspicion as to the tendency of forming "a trust" among dealers and manufacturers of apiarian supplies; and that a certain firm had been taken in during the convention at Omaha, and that this meant higher prices for goods generally which the bee-keepers have to buy. I am not at liberty to name parties who thus advised me, but I will say that, if this should be true, the prospects of getting a strong union are not good.

In an editorial footnote, which I indorse, Mr. Abbott says:

> If there is any thing in the shape of a trust in connection with the United States Bee-keepers' Union, I am not aware of it. If I knew of any thing of the kind I would not remain a director of the Union very long, for I am down on trusts of all kinds. I believe every man has a right to buy as cheap as he can, to sell for what he pleases, and to conduct his business according to his own judgment, so long as he accords to others the same right; and that whoever tries to prevent him is an enemy of society.

His reference to a "certain firm" being "taken in" is as unkind as it is uncalled for, for as it stands it is a fling at four manufacturers. Two members of the Root Co. were present at this convention. Three other manufacturers — The G. B. Lewis Co., The Leahy Mfg. Co., and E. Kretchmer — were also represented. I feel very certain that none of the firms would have any thing to do with the Union if it were a trust organization of the character hinted at by Mr. Stolley. If the Union or its officers had been engaged in forming a trust among dealers in and manufacturers of apiarian supplies, the fact could be easily proven.

As to the statement that prices of apiarian supplies will be higher, that will no doubt be easily refuted by the '99 catalogs that will probably be out in a few days.

TIN VERSUS WOOD FOR HONEY.

I FIND the following editorial in the *Amer. Bee Journal* for Nov. 10:

> A short time ago we were again thoroughly convinced of the great superiority of tin over wood for making honey-receptacles. We saw some barrels of honey emptied, which, before the honey was put in, weighed 28 lbs. each. After the honey was removed, those same barrels weighed 40 lbs.
>
> We are surprised that any bee-keeper will persist in using barrels for extracted honey. He certainly would not if he had to *buy* honey in them. Besides the large amount of honey which they soak up, they are hard to handle, and, when once the honey is granulated, it is a big job to dig it out.
>
> How different are the 60-lb. tin cans! They do not soak up any honey, and the honey they contain can be reliquefied very easily in case it has granulated.
>
> We do hope the time will soon come when wooden barrels for holding honey will be generally condemned, and that the much lighter, handier, and ever so much better tin cans will take their place.

Here is another case where locality seems to govern personal preferences. Pretty much all through New York there seems to be a preference for kegs, half-barrels, and barrels, instead of square cans. I always talked in favor of these latter because I believed them to be less objectionable. There is no tainting of the honey from the wood, as in the case of kegs, and no shrinking of staves resulting in leaking.

In talking about this same matter with S. A. Niver and W. L. Coggshall, both expressed themselves as decidedly in favor of the kegs as against the square cans. Said Mr. Coggshall, "Pound for pound, kegs are far cheaper."

"Yes," said Mr. Niver, "and lots handier. Why, those square cans, two in a case, are regular back-breakers to lift. I just wouldn't have them. You can roll a keg without lifting it."

"But," said I, "don't you have trouble with your barrels leaking?"

"Not at all. The great trouble," said Mr. Niver, "is that some fools think it necessary to put water into the kegs to make them swell tight, and then after the water is emptied out they fill them with honey. It is a serious mistake, for the staves will shrink after the honey is in the package, as sure as fate. Barrels and kegs should be well made, and the staves should be thoroughly *seasoned*, and hoops driven up before putting any honey into the barrels."

When I talked with Messrs. E. France & Son, of Platteville, Wis., about this same matter they expressed themselves as decidedly in favor of barrels, and for about the same reasons, as given by Mr. Niver.

In the far West — Arizona, Colorado, and California—square cans are the only packages that *can* be used. The hot climate and dry air would render kegs and barrels utterly out of the question. Jumping again over into the State of New York, there are many commission men who prefer kegs and barrels, and occasionally a few who would just as soon have the square cans.

The truth seems to be about this: Barrels and kegs rarely give any trouble by leaking, *provided* they are well made, well seasoned, and the hoops driven up solidly *before* the honey is put into them. But there are many ignoramuses who have an idea that the barrels should be scalded out, or, if not scalded, water swished around inside until the staves swell tight. Well, when these chaps put their honey into these barrels, trouble is almost sure to follow; and this is why, in many markets, the cans are preferred. We always prefer to buy in square cans ourselves.

Neither do the square cans give entire immunity from leakage. There are other ignoramuses who, in nailing on covers to the cases, drive a nail through the can. Of course, there is no leakage for the time being; but as soon as the can is turned upside down, or stood on end, then there is a "muss." Again, some freight-handlers give the cases such severe dumping as to break the seams of the cans.

Why don't supply-dealers list kegs and barrels in their catalogs? We have done so, but there is very little call for them, on account of their great bulk, and the consequent freight rate as "empties." And then, moreover, there are usually cooper-shops scattered in various parts of the country, and, of course, bee-keepers buy them near home. Square cans, on the other hand, are made in only one or two factories in the United States, and must come through distributing agents; and for the same amount of carrying capacity they take up less room in a car.

HONEY SOAKING INTO THE WOOD OF BARRELS; AN IMPORTANT QUESTION.

After I had written the foregoing I read over Mr. York's editorial again, and my eye caught the statement that the barrels *before* the honey was put in weighed *28 lbs.*, and after removal, *40 lbs.* If this proportion holds true generally, it is indeed a most serious objection to barrels and kegs. But my impression is that the cypress kegs used in the State of New York do not honey-soak; and if they do, the trouble could be remedied by pouring paraffine, while hot, around the inside of the barrels.

I should like to hear from those who are in position to know — not that I question Mr. York's statement, for no doubt the 28 and 40 lbs. is the actual truth concerning the barrels he refers to; but what I should like to know is, is there this great difference with barrels *in general?* and do oak barrels soak up more honey than barrels and kegs of cypress? and, again, would paraffining correct the trouble with either?

After writing the foregoing I found the following in the *American Bee Journal*, going to show that paraffining the barrels will probably remedy the honey-soaking objection. Here is the item, from one of the most extensive and prominent bee-keepers of Florida:

> The editorial on page 712 gives only one side of this matter. I wax all my barrels with paraffine, at an expense of 10 cents each or less. This prevents soaking of honey into the barrel, of which is given an extreme case, as also all danger of flavoring the honey with any wood flavor the barrel might give.
>
> The objection to tin cans, with us at least, who live so far from the general market, is the extra cost. The greater expense of tin, as well as the extra freight on honey in cans over honey in barrels, is very nearly or quite one cent a pound; while the increased price we may obtain for it may be one-fourth cent a pound. The question with us down here is simply one of dollars and cents, and barrels seem to have a decided advantage. O. O. POPPLETON.
>
> Dade Co., Fla., Nov. 14.

IMPROVEMENTS AT THE HOME OF THE HONEY-BEES; 400-HORSE-POWER ENGINE; ELECTRIC TRANSMISSION; NEW MACHINERY; NEW BUILDING.

THE unprecedentedly heavy run of business during last spring and early summer, crowding us away beyond our capacity — the breaking-down of shafting, of belts, the crowding of every thing, in fact, to the breaking-point, have forced us to make some very extensive enlargements and improvements. We have just placed a 400-horse-power engine on its foundation, capable of standing 125 pounds of steam pressure. It is an automatic Harrisburg Standard high-speed engine.

Heretofore we have bought engines that were too small; and three or four years ago, instead of taking out our 100-horse-power engine and putting in a larger one, we placed alongside of it another engine of 75-horse-power capacity, believing that we should then have ample power for years to come. But hardly two years had rolled by before we had to speed up both engines and increase boiler pressure to get greater power; and even then both of them groaned under their loads; and during the last season the main drive-belts kept slipping; and to add to our other troubles the shaft to our large engine broke right in the height of our busy season, and this necessitated a delay of two weeks. We determined, therefore, that this year we should not only put in one large engine to displace the two small ones, but one large enough to give us a great surplus of power. We probably shall not require at present over 225 horse-power; but as our business grows we shall have a reserve of 175 horse-power, and, on a pinch, could squeeze out of the engine as much as 500 horse-power before it would slacken its speed.

The line-shafting broke because it was too small and too long; or, to put it another way, it was loaded far beyond our original intentions. To help out the shafting, we put in one 100-horse-power dynamo, in addition to the 320-light dynamo installed the last year. Connected with these machines will be something like 10 different electric motors. Two of them will be 60 horse-power each; two more, 5 horse-power each; one, 7½; one, 15; two, 2 horse-power; one 3, and one 1 horse. These are stationed in various parts of our manufacturing plant, and are anywhere from 100 to 500 feet from the generators. Instead of long lines of shafting, we have copper wires. Various motors are so placed as to apply the power at that point in the line-shafting where the greatest load falls. This, in effect, increases the capacity of the shafting, and yet leaves its size no larger than before. The large generator will be run by the 400-horse-power engine, and the small one by a separate 35-horse-power; and by a special arrangement of the switch-board we can run any motor from either generator.

But the electric motors do not by any means displace the shafting, for the larger part of our power will be applied through the old belts and shafting already installed, independently of any electric current.

On the south end of the wood-working shop we have built on an annex, three stories. This is to relieve the congested condition of the floors in the main wood-working building; and this, we calculate, will increase our capacity somewhere about 50 per cent. Last year, during the height of the season the workmen were in the way of each other, to say nothing of the manufactured stock that was piled all over every thing, making it next to impossible for the men to work to advantage.

There is another annex, located on the west side of the building, and in this is installed our large lumber-elevator — large enough to carry a heavy wagonload of lumber, if need be, from the first to the third floor. This was placed out of the main building in order to get room, and in order to avoid the danger of fire from the open hatchways, and the further danger of employees falling into the openings, or of being crushed by the dropping of the elevator platform. Such casualties we narrowly escaped last season, and are now in hopes to render them impossible.

In addition to all this, the engine-room is being enlarged to take in dynamos and other electrical equipment.

In the boiler-room there is being installed a large 350-horse-power heater to heat the water before it goes into the boilers.

In the wood-working shops will be placed new wood-working machinery, such as a power feed rip-saw, new molder, power gang section rip-saws, sanders, etc.

Taking it all in all, the cost of the improvements will amount to something like nine thousand dollars. These, together with the fact that we have about $40,000 worth of choice lumber in the yards, will put us where we can take care of next year's trade.

NOTES OF TRAVEL
BY A. I. ROOT.

BACK AGAIN OVER THE MOUNTAIN DIVIDE.

The weather is extremely hot in the valleys of Montana; and it really looks funny to see the thermometer between 95 and 100, when right over the tops of the buildings you see patches of snow apparently only a little way off. During the afternoon, especially about the time I wheeled over to the fish-hatchery, the temperature was pretty high, and riding uphill was rather warm work. I knew it would take me pretty much all of the next forenoon to reach the top of the divide on my way back home—that is, if I waited for breakfast-time at the hotels; therefore, during the evening I went around to the different restaurants and asked if they could give me a breakfast by daylight in the morning. None of them wanted to get up so early. But I had laid my plans to climb those mountains in the cool of the morning, and I did not propose to be baffled. I ordered a nice beefsteak and some toast. In fact, I had them fix up a nice breakfast for me the night before. Then I started off next morning (with my breakfast tied to my handle-bar) just as soon as it was light enough to keep the road. My way into the town the day before was a good deal roundabout; but the clerk at the hotel told me there was a shorter cut along the railroad, but I would have to open a few gates before I got into the mountains. There is one trouble about riding so early where you are on strange ground — you do not see anybody to make inquiries of. Well, as *usual* I got off the trail. The houses became scarcer, and the road dwindled down until there was none. Finally I ventured to wake some people up. By the way, I wonder if it is the fashion in Montana for the people to do a great part of their sleeping after daylight. I reluctantly awakened one man, and was told that I was off from the track on an old deserted trail through the mountains; that it was considerably traveled a number of years ago, but now abandoned. He said I could get through, but he rather advised me to turn and go back several miles. I did not like to go back, and so I pushed ahead. He said there was one more house some distance on, and then I should have about eight miles through the wilderness. When I arrived at that last house I was ready for my breakfast of beefsteak and toast. An old gentleman was just starting out to work in the fields; but my breakfast seemed rather dry, so I asked him to make me a cup of coffee. Now, may be you would not believe it; but my old friend made me about the nicest coffee I ever tasted; and he had some genuine "mountain cream" to go with it. He would not think of making any charge for his trouble; but as his little home seemed to be exceedingly humble I insisted on leaving a quarter beside my plate; and he seemed quite pleased that I appreciated his particular plan of making coffee. Then began my lonely and tiresome climb. It was somewhat tiresome, but I assure you I enjoyed it for all that. This range of mountains is peculiar from the fact that little rills of running water are found at least every half-mile. I presume the water comes from the melting snows higher up, as it is most deliciously cool and soft. Of course, I did not run my wheel very much, only as it happened to be down hill or nearly level. The old bridges across these spring runs were rotted and gone, and this made it a little more laborious. After I had toiled on for what I thought to be about *ten* miles I said to myself, "Well, now I am coming to where it is inhabited, sure, for there is a whole flock of chickens that belong to somebody." Then I wondered that a farmer away out in those mountain wilds should keep a new breed of chickens that were handsomer than any thing else I had ever seen or heard of in any of the poultry-journals. I walked right up to the flock to admire them better. The male straightened up and challenged my approach, much as they do in a barnyard. Then I noticed that the hens had a peculiar but very beautiful topknot. After I had studied them quite a little spell, to my surprise (at a signal from the whole flock) they took wing and sailed gracefully away. Even then I said to myself, "Why, how that fellow's chickens do fly when they are a little frightened!" Then it occurred to me that I had blundered into a big flock of wild birds. I wonder if some hunter can tell me what they were. The shape of their bodies and the carriage of their heads was a little more like some breeds of game fowls. A little further on, from the crest of the mountain, I saw the railroad down below me, and a town called Timberline—I suppose so named because the timber grows only sparsely above that elevation. Then I had fun in following a sheep-path from the top of the mountain through its winding course down to Timberline; and the rest of the way I had a very good road back to Livingston.

MINNEAPOLIS AND VICINITY.

I had promised my good friends the Acklins that, if an opportunity presented, I would make them a call on my way home. Now, the railroad passes very near their house, a mile or more before reaching St. Paul. I was looking out of the window and saw their home, and was a little surprised to see the train slack up at just about that point; and when it promised to stop entirely I took my grip in my hand and stepped off the train. I was a little curious to know why they stopped right out in the fields. Pretty soon I found out. The conductor had alighted from the train about the time I did, or a little sooner, and I saw him chasing a crowd of boys. By the way they were cursing and swearing I presume there was some mischief afloat. By and by the conductor returned, pulling a boy along by the collar. The boy was kicking and swearing and fighting but nevertheless the conductor had him prisoner. I did not learn whether these street Arabs were stoning the passenger train, or what it was; but Mrs.

Acklin said there had been a good deal of trouble made by the boys, and I presume the conductor singled out the ringleader and took him captive. On my previous visit Dr. E. K. Jaques, of Crystal, Minn., who lives in the suburbs of Minneapolis, urged me to make him a call. We did so the next day, and he very kindly took his fine team and carriage and showed us around. First we visited the market-gardens that supply the twin cities, and it was indeed a rare treat. They get wonderful crops, and seemed to do well, even though most of their vegetables, melons, etc., are sold at exceedingly low prices. We passed two very pretty thrifty fine-looking gardens that had a little bit of history connected with them. The doctor said he was sure it would interest me in two ways. He pointed over to the beautiful fields of various vegetables, each one being a perfect picture of thrift and luxuriance, and then he spoke something as follows :

"Mr. Root, ten years ago that man was one of the most hopelessly intemperate cases we have in our neighborhood. His poor wife did every thing in the world to get along and keep starvation from the door. He had reformed again and again, only to go back deeper and deeper ; and just when everybody had decided his case was utterly hopeless, the Salvation Army got hold of him. People laughed when he joined their ranks and began presenting Christ Jesus to his old comrades. He did not mind their laughs and sneers, however. He stopped all his bad habits, and went to work, and for ten years he has been a most exemplary father, husband, and citizen. Now, none of us can be positively sure that he will not, even yet, in some unguarded moment, go back ; but the Salvation Army has certainly helped that man to make a good record for *ten years;* and I say God speed them in their work."

By this time we had got along in sight of another equally fine-looking vegetable-garden, and the doctor resumed :

"Mr. Root, I have not finished my story yet. The man who owns that place over there was a boon companion of Mr. ——. After he was rescued he went after his special chum. This chum, however, did not take kindly to any thing pious. He jeered and ridiculed, and tried to throw off his old comrade; but the old comrade was in dead earnest. He held on to his friend, and prayed and wrestled (perhaps as Jacob wrestled on that memorable night — who knows ?), and finally *righteousness* triumphed over *iniquity*. The spirit of Christ Jesus was more powerful than the iron chains of that old appetite. The *two* men were rescued from the spoiler, and there are records of two clean lives for ten years, or almost that, instead of one. Perhaps, Mr. Root, you might mention this in some of your writings, as an encouragement to some of the members of the Salvation Army in the work they are doing."

Now, the doctor did not say all that I have said in the above, but he stated it very strongly in his own words, and I have taken the liberty to give the facts in my own words. God speed the Salvation Army, even if they do not always do things just as you and I would do them. At least one organization of these people has asked to have GLEANINGS in their reading-room, and I hereby propose to send it free of charge to any Salvation Army quarters where it will be read, as long as they want it.

After we had got through the melon-patches and gardens, the doctor kindly took us around among the lumber-mills of Minneapolis. Why, I was perfectly astounded. I knew there was a good deal of lumber brought down the Mississippi River, and worked up somewhere about Minneapolis; but I did not know there were acres and acres of lumber-yards—great piles as high as lofty buildings, put up so straight and true that it looked like a model city of pine boards ; and, by the way, I wish the foreman of our lumber-yard could take some lessons from these piles in sticking up lumber so it will season straight and true. And then, further along, there were piles of kindling-wood—kindling enough, so it seemed to me, to start breakfast for every family in the whole Northwest for years to come. Many of these lumber-mills are turned by the power of the Mississippi River, that I have told you about before, but quite a few of them are worked by steam-plants.

OUR HOMES, BY A. I. ROOT.

Blessed are they that do hunger and thirst after righteousness, for they shall be filled.—MATT. 5 : 6.

I have from time to time published a good many kind words from our readers and our customers. I have given you letters from those who are greatly pleased with our work, who have praised our accuracy and commended our methods of doing business. I think it is no more than fair that I should now give you something on the other side. The letter I am going to quote is not unkind in any sense ; in fact, I take it as an exceedingly kind epistle to myself personally. I believe the writer is a special friend of mine, or else he would not have written thus frankly. Our very best friends tell us plain truths. I have written a good many times about how to do business. To-day I want to say something about how *not* to do business. I am now ready to submit the letter I have mentioned :

Mr. A. I. Root, dear Sir:—I have a matter which I wish you to look up, believing you have the power, as president of The A. I. Root Co., and thinking possibly some employees in said company need a shaking-up. A short time after purchasing T. K. Elvey's apiary and fixtures he handed to me your price list, 83d edition, March, 1897, which had just reached him. I saw by this list that you had the new metal rabbet already on the market. I thought the idea so good that I ordered 1000, taking pains to make every thing clear, even to cutting out the cut and marking the desired rabbet with a pencil so as not to have any mistake, as I had been warned not to order so many, by Mr. Albert Broomell, as he stated said company would be sure to send the old-style rabbet as they did him when ordering an odd size. But I told him I could make it clear, as I had dealt with you when I was in the East.

From a letter I received from your company, dated Dec. 27, 1897, I take it they paid no attention to my explanation, but simply copied the order on the invoice, “1000 14-inch rabbets,’ and they admit they did not specify Fig. 24, as that was their regular style then; and this may all be; but the new style was in that cut, and I marked it with a pencil, and there is no sound excuse for any mistake, as the whole explanation was thorough. The above letter, written by your clerk, also stated that either kind can be used in the same place, which is not so. I can not use the rabbets with the back on. I have tried to dispose of these goods rather than to ship them back, as the freight charges would be heavy, but have not succeeded in doing so. I used some by making changes, and sold some, and have 550 still on hand. The A. I. Root Co. seems to have dropped the matter. I see now that I did not do the right thing in sending the money before receiving the goods. Kindly investigate, and advise. Yours truly, H. F. Dolson.

Phœnix, Arizona, Nov. 7, 1898.

P. S.—I need these goods now for making up supplies, as business with bees commences in March, when a person has no time to make bee-hives.

H. F. D.

There are several things about the above letter that give me pain. First, the writer informs me that he purchased an apiary belonging to my good friend T. K. Elvey, who dropped business and spent two weeks with me off in the mountains and deserts on that trip to Camp Verde that I have written to you about; and it hurts me to think that any thing should occur to mar friend Elvey's opinion of myself and of The A. I. Root Co. As soon as the letter was received I called for the order, and here is the way it reads:

One thousand (1000) tin rabbets, 14 in. long, for frame-rests. I want the new pattern as shown in Fig. 24, March No. 1897 catalog; see cut from catalog inclosed.

Along with the above was a slip from the catalog, giving a cut of the rabbet he specially wanted the whole thousand to be like. There was no possible excuse, surely, for sending him any thing he did not order. Now, to explain how he got the old style when he so plainly ordered the new, I shall have to go back a little. Some years ago Mr. Calvert, Ernest, and others in our establishment decided that it would save us a very great amount of trouble, delay, and anxiety if a letter containing an order for goods was not submitted at all to the packer, who picks the goods up and boxes them ready to ship. There are many reasons for this. First, if the original letter goes to the packer during the confusion of the busy season the letter is liable to be lost; and if we have not the address down in a book somewhere we are in a bad fix sure. Again, a great part of our orders for bee-supplies are strung all along through long kind letters. A. I. R. or Ernest is evidently expected to read these kind letters, which is done, and we are always glad to receive them; but experience has shown that it is out of the question to get our friends to tell just what they want and nothing more. In fact, sometimes they do not know themselves. They describe what they want, and then we use our best judgment in boiling it down and making a plain order in black and white. For this reason our letters have been turned over to some competent manager who makes out the invoice, telling all the packer needs to know, and nothing more. I warned the boys there would be trouble, and there *was* trouble very soon. But there has been trouble both ways. During the past season it would have been entirely out of the question to ask our packers to read long letters to decide what was wanted. Of course, the long letters are all right; but only one person should be expected to wade through them all. The way I used to manage, two, three, and sometimes even four clerks had to read letters all through; and even with our present management at least two people have to read every word that is written. To illustrate:

The lady who opens the mails (Mrs. Root's sister) is expected to read every word in all letters that are addressed to The A. I. Root Co. She must do this to be perfectly sure the writer does not somewhere allude to money inclosed, and also to be sure it reaches every clerk who needs to see the letter. By the way, may I stop long enough here to request urgently every one of our friends who sends us money, to tell at the very outset just how much he expects us to find inclosed? Then while the letter and envelope are both before Mrs. H.—in fact, in her fingers, she can instantly detect any discrepancy. Sometimes we find a part of the money and not the other part. For that reason, if you inclose stamps you had better tell how many and of what denomination. A great many times letters are submitted to me because I have had so much experience in the matter. They come to me, because no one else can tell positively what amount the sender said was inclosed. Let us now go back to friend Dolson's order:

The clerk who received the order was so certain that they were sending out the new style and nothing else, at the time the order came, that he simply made out an invoice to go to the packer for 1000 14-inch rabbets; but by some unexpected state or affairs that he did not know any thing about, the packer sent the whole thousand of the old style. When friend Dolson received the old-style rabbets, of course, he was a good deal put out; but it seems our clerks, instead of telling him that, under the circumstances, we would send at once, freight prepaid, a new lot, they explained how the mistake happened, and suggested that he could use the old ones without much inconvenience. Now, this latter may be true; and it is also true that a good many people have notions—peculiar notions, if you choose. I am one of that sort myself. Sometimes I do not know but my particular likes and dislikes are only notions. I think I will stop long enough to tell you of one of my notions right here.

We have in our home some very light (and I think neat) cane-bottom chairs. When I am tired out it is quite a task for me to move a heavy chair to the place where I wish to sit. Then the cane-bottom chair is most perfectly ventilated. In hot weather this is quite an item to me if to nobody else. I do not want an upholstered chair to sit in. I do not want a rocker. A chair with a whole wooden bottom I would not take as a gift. I would not have it, even if it cost $25.00; and a chair with a cushion is an abomination. Other folks may have a cushion if they want, but no cushion for me. I like my own chair. Now, when somebody puts one of the new-fangled chairs at my place at the table when I am tired and hungry and in a hurry, I feel like taking the thing and throwing it into the back yard. I have never done it, however; for after I get seated in my favorite chair the next thing is to ask God's blessing on our home, and that would not hitch on very conveniently as a supplement to the act of pitching the chair into the alley, nor even expressing my vexation in unchristianlike remarks. The only thing I can do is to remove the offensive chair and hunt up my own. Sometimes I groan (mentally) as I do it; but when I get into my own seat in the sort of chair that always rests me (sometimes I think even the sight of it does), then I am all right. Now, I have my notions about chairs. None of the rest of the family agree with me, but of course they permit me to have my preference, and nineteen times out of twenty the chair I love is placed right before my plate.

Friend Dolson has his notions in regard to rabbets. His reasons may be good ones or they may not be. It is none of our business whether they are or not, for that matter. He has paid his money, and he is entitled to what he pays for. Still more, as I take it, our boys advertise the new style as something greatly superior to the old; and after they had recommended it, and urged people to order that kind, it would be most preposterous, not to say unkind, to intimate that our friend could not have what he wanted and paid for.

When I got hold of the matter, some of the clerks suggested that no complaint was made until several months after the goods were received, and that our stationery declares all complaints must be made inside of ten days. Now, this very thing illustrates the folly of trying to lay down cast-iron rules. The reason why friend Dolson waited so long was because, *out of the kindness of his heart*, he thought he might use or get rid of the old-style rabbets. He waited because he wanted to do us a favor, and it would be most unkind and ungrateful, as I take it, to even suggest holding him down to the ten-days rule that might justly apply in cases that generally come up.

Well, friends, I suppose you will all agree with me that the matter is bad as it is; but further inquiry developed the fact that our customer wrote a very kind letter of remonstrance *last May.* That letter was turned over to Mr. Calvert, our general manager, to answer. And now comes the most humiliating part of it. During the past season Mr. Calvert was overloaded with business — so much so that I sometimes thought he would go crazy if it had been anybody but John, with his great rugged Canadian constitution. John was obliged to admit that the letter of complaint received in May had been put away with a lot of papers, and actually remained unanswered until along in November. When I got hold of the letters the grass did not grow under my feet, I assure you, until I had sent a letter off saying I was ashamed to confess that The A. I. Root Co. had ever been guilty of any such omission and neglect. I told him I would send him 1000 new rabbets by first train; and if he could not sell the old ones for enough to pay the freight on the new ones we would pay the freight also. Now, here is a clause in the letter of May 22d that gives me more pain than all the rest of it:

The A. I. Root Co.:—I took every means possible to make the matter clear, because I had been warned by Albert Broomell, a bee-keeper, not to send you such a large order, as you would be sure to send the wrong thing as you did them. Now, as these were regular goods advertised in your price list, with cut, and as I made the matter plain, as my copy-book shows (letter of March 5, 1897), I fail to see any good reason why such a mistake should be made; therefore I think you should suffer the loss. I was compelled to use 400 of them at once, and afterward sold 50; the rest I have on hand. I sent in the order for the new style because I liked the idea so well, as I get more room around the end-bar, and regret greatly that I was compelled to use the 400. Furthermore, I had to pay nearly $3.00 freight on these goods. The freight on the whole order was over $12.00. Now, I consider it proper that you take the 550, which I still hold, and ship me 550 of the new style, as ordered, with freight paid, or return cash, and reimburse me for freight paid, and do with the goods I have here as you please. I have held the goods over a year, thinking I might dispose of them in some way. Yours respectfully, H. F. DOLSON.

Phœnix, Arizona, May 22, 1898.

The part that gives me pain is to the effect that another customer of ours in Phœnix — one that I know and highly esteem—intimates he has been treated in the same manner; and then, to cap all, this plaintive letter which, it seems to me, ought to touch the heart of any one, received no answer whatever, but was kept waiting with a lot of other letters. Now, I am somewhat vehement, I know; but I think vehemence is a grand good thing under some circumstances. I do not wish to boast, dear brothers and sisters, but I think I tell you the truth when I say that, during all of my business life, when a fair kind letter like the above came to hand showing how some customer had suffered because of our blundering or negligence, I have made it a point to rush off some kind of answer, without waiting a minute. If no stenographer was in the office, or if it was after office hours, when I got hold of the letter I would get a postal and address it with my pencil, and then I would say, "Bro. ——, you have been shamefully treated. I give you my word of honor that every thing shall be made straight and right. I will examine into the matter, and write you more fully next mail." Then before the next mail went out I took pains to hunt up all the correspondence bearing on the case, read what letters had been sent, and finally paying our long-suffering friends not only all they claimed as justly due, but something further, to heal up their wounded feelings. A great many times such parties would not take this "something further," but in that case I could feel I had done *my* duty.

Please do not understand by the above that our boys, my sons and sons-in-law, are not as much disposed to be fair and liberal in business as I am. I am sure they are, each and all, hungering and thirsting after righteousness, and I understand righteousness to mean *right doing*, no matter what else it means. Sometimes John and Ernest both have settled difficulties in a way that I thought was absolutely extravagant and unreasonable. And this reminds me that one can not, in the broad sense of the term, guarantee satisfaction in *all* cases. A man once demanded $50 damages because I sent him a few pounds of foundation that was not just what he ordered, and I was foolish enough to pay it. Quite recently a customer wanted $10 damages because five cents' worth of seeds was not what it should have been. But such cases are very rare.

Now, one of the principal reasons for publishing these letters is because I wish to know if it is really true that The A. I. Root Co. is in the habit of sending out things not according to order, and, worse still, neglecting or delaying the matter of making such transactions satisfactory. This matter of ignoring special requests of customers is a grievance more or less widespread. At our convention in Buffalo, a little over a year ago, our good friend O. L. Hershiser illustrated this point by a little story. A man who has his own notions in regard to things went into a restaurant and asked the waiter if he could have a nice beefsteak served just according to order. He said he was willing to pay for all the extra trouble, but he "wanted *what* he wanted." The waiter was very courteous and accommodating, and promised that every thing should be exactly according to his wish, and listened attentively while he described what sort of steak he wanted, how it should be cooked, and all the particulars. All was pleasant so far. Our friend thought he had got into just the right kind of restaurant. Imagine his dismay, however, when he heard the same waiter, a few minutes later, call through the speaking-tube, "One beefsteak!" and nothing further. All the details that he had been so careful to thoroughly instill into the mind of the genial waiter were entirely ignored. I do not know but this waiter excused himself by saying that what the man described was exactly what they always served to everybody. If this was true, all right; but when the steak came it was quite ordinary, and not at all what was wanted or ordered.

Now, there are quite a few of the friends whose eyes rest on these pages who are in some kind of business. They are serving their fellow-men in some capacity or other. We are all taking orders and filling them. Let us ask ourselves the question, "Are we like the waiter in the restaurant, or are we hungering and thirsting after righteousness, and, as a legitimate consequence, serving our fellow-men because we love them?"

People have wondered and sometimes questioned as to the secret of the great growth of our business. Its early growth certainly depended on the fact that we studied the wants of our friends and fellow-travelers, and tried hard to give them exactly what they asked for. Sometimes we surprised them by giving them goods better than they expected for the money they sent; and I confess I enjoyed exceedingly to see such happy surprises. But I should not want to do business a day—in fact, I am not sure I should want to live—if I surprised these friends of ours by sending them something they did not order and did not want. Friend Dolson tells us he was advised not to send the money with the order, for if he did we would send him something he did not want, and that after we had got the money we would not pay any attention to complaints and remonstrances. In the above case it really looks so, I confess. Now, I have not consulted with the other members of our firm in regard to what I am going to say, but I do not think they will object very much. It is this: If our company has been guilty of sending you something you did not order and did not want, and, worse still, neglecting to make the matter right when courteously informed of the fact, I wish you would address a letter to your old friend A. I. Root, and mark it "personal." I assure you it will get some sort of reply by the first mail. I simply wish to know if it can be true that only the kind words come to me and not some other things that I should be glad to know about.

Just one word more. When our business was first started I spent a good deal of time in hunting up the addresses of bee-keepers through all the agricultural papers and bee-journals, and every thing else; and when I had secured a list of these friends I began to get acquainted with them, and get orders, and I tried very hard indeed to let these people know that, in the language of our text, I was really hungering and thirsting after righteousness. When a clerk or anybody else was disposed to be impatient or short with any of these special friends, I remonstrated. I somehow learned to feel that orders were a sort of sacred trust, and that God expected me to be careful about wronging even the least of them or hurting their feelings unnecessarily. It is natural for me to be selfish, I confess; but I try hard to keep down selfishness with these friends far away, especially when they trust me with their money in advance. In my prayers of years ago and in my prayers of late, I have often said something like this: "O Lord, I thank thee for these dear kind friends thou hast given me, scattered over the land far and near. Help me to be careful about all my relations with them. Help me, in short, to honor and recommend the dear Lord and Savior by the way in which I deport myself, especially in our business transactions." As I look back it seems to me I have lived up to this prayer in only a very feeble and imperfect way; and I often feel like asking these dear friends to remember that I am still *exceedingly* human, and therefore to be slow in concluding that I am deliberately and really selfish and scheming.

ELECTRIC LIGHTS FOR MECHANICAL WORK, ETC.

Since we have been using electric lights everywhere, again and again have I said to myself, and sometimes out loud, "Thank God for this wonderful, gracious new gift of the nineteenth century." In our work of installing new machinery, a great deal of it has to be done in dark basements in the month of

November. Just a very few years ago we should have been obliged to get along with it as best we could with a kerosene-lamp, lantern, greasy torch, or something of that sort. Kerosene is very unsatisfactory in many respects. Where men are working with heavy tools the lamp often gets knocked over, the chimney gets soiled by greasy fingers, and, worst of all, the light never shines right under where you are holding it. A shade helps the matter somewhat; but nothing can compare, for mechanical work, especially for work down on the ground or in the ground, with the electric globe. With the aid of electric-light cords varying from a yard in length to fifty feet, we shed a bright light anywhere men want to work. If it is a damp and chilly place, the heat from the bulb is a good thing to warm up cold muddy fingers. Just now we were pushing the mason work on the little brick room for the new 120-horse-power dynamo. Just as the masons began to think it was quitting time, even though it was only four o'clock, I pushed a wire through a cranny in one of the walls, and screwed on an electric globe. Why, daylight — especially November daylight — is not a comparison. The one little globe made every thing plain and distinct, and no wonder, for it is 16 candle-power, and yet these globes cost now only 14 or 15 cents, and each one will run 1000 hours and give a magnificent light of wonderful brilliancy. May God be praised for the man Edison! I wonder if he ever thinks of the amount of light he has been able to shed in dark places.

There is just one other thing, however, that tries me quite a little. It is because no one, unless, indeed, it is Mrs. Root, keeps these globes wiped up bright and clean. Oh how I do love to take my pocket-handkerchief and astonish the people by letting them see how much even electricity is improved by a clean globe! and it is ever so much easier to clean an electric globe than it is to clean any kind of lamp-chimney. The inside is always spotless, without any rubbing. Yes, just now while I write I am holding in my hand one of these beautiful globes to shed light for my stenographer; and while I shed the light I am warming my fingers that got chilled because I stayed out so long helping the masons.

THE GROUND-CHERRY, OR HUSK TOMATO.

About a year ago, while stopping at a farmer's house in Canaan Tp., Wayne Co., just south of this one, I tasted some fruit in a pie, that was not only new but very refreshing and attractive to my taste. The good lady of the house informed me it was the ground-cherry, and gave me some of the fruit to take home, and some for seed. We have just been using some of the fruit for sauce, and, much to my surprise, every one of the family declared it was delicious. I was a little surprised at this, because our children had become a little suspicious of me in recommending so many new fruits and vegetables. When I brought the delicious canned guavas from Florida they made up a face at my new tropical fruit. The ground-cherry captivated the whole household at once. It was not exactly love at first sight, but love at first *taste*. This plant grows wild all over our country, I believe. In its raw state it is not particularly attractive; but cooking seems to take out every thing objectionable, and leaves only a delicious fruit flavor. Try it, and see if I am not right. By the way, there is a new plant said to be much larger and finer-looking, called the Chinese-lantern plant; but we have sown seeds of it for two seasons without getting the plant, and I see some notice to the effect that they are not very good to eat. How is it, friends? Now, if there is any of the common ground-cherry in your garden or around your premises, just try them for once and see if I am not right.

MORE ABOUT SWEET CLOVER.

Mr. A. I. Root:—I see you have tried to give sweet clover another puff. The stand you have taken in regard to that has done people in different parts of the country a great injury. I offered you fifty dollars one time if you would destroy what little I am troubled with. It is well for you that you did not accept the offer, for I have been trying to destroy it for ten years, and it is still growing. I have to fight it in my garden the same as I do any other vile weed; but where it does the most harm is in pastures that can't be plowed and cultivated on account of rock or other obstructions. For my part I can't see why you stick so tenaciously to that vile weed, for there are plenty of other plants that can be raised that will produce honey, and make a crop to turn under, and at the same time harm no one. I presume that, on that clay land where you live, it doesn't do as much harm as on other kinds of soil.

Now, brother Root, it seems to me you had better apologize for what you have done, and try something better. There are certainly many plants better, and none any worse. I have meant this for good.

Yorktown, Ill. LEWIS A. SAWYER.

I have given the above in full because I like to give everybody a hearing, even where their notions are quite extreme. And then there is a point that I confess I have not heard of or thought of before. Our friend has some rocky ground that can not be plowed. In that case the sweet clover can not be turned under for a fertilizer. And we must accept his statement, of course, that his cows will not eat it. But I hope he will excuse me if I still hold to the opinion that they can be taught to eat it; for I can not see why cows will eat a plant greedily in one locality, and can not be taught to eat it in another. I have sometimes wondered if it is not possible there is something else so nearly like sweet clover that a mistake has been made. Let me suggest that our experiment stations have this whole matter in hand in regard to sweet clover; and they all decide that, so long as it is a clover, it surely ought not to be classed with noxious weeds. Even red clover is a *very* bad weed in a strawberry-patch; but who, on that account, would think of exterminating it from the whole farm? I am more interested in sweet clover because of its value to the general farmer than I am because of the fact that it is a honey-plant. The seed is now bought and sold by the ton, and *acres* are grown where the owner of the land keeps no bees at all, and has no interest in bee culture.

The Bee-keepers' Review.

Its Editor's Experience with Bees--Written by Himself.

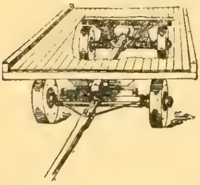
I don't wish to deceive you. This is an advertisement;
knowing this, if you still wish to read it, well and good.

In the making of a journal, the editor is the most important factor. It is he who does the planning, who says what shall and what shall not go into the paper, who decides the thousand and one things that go to the making or marring of the paper. A fine edifice, with all its architectural beauty and adaptability to desired ends, is no more truly the creation of the architect than is a handsome, useful journal the product of its editor. Prospective subscribers to the Bee-keepers' Review would like to know something of its editor, to know in what degree he is fitted for the position he occupies. Being well acquainted with him, I am able to tell the following:

He was 25 years old when he began keeping bees; but, for six years previous, he had studied bee-keeping in every possible way—read bee-journals and books, and visited bee-keepers. When he began bee-keeping he had a good theoretical knowledge of the business —as good, perhaps, as a lawyer or a doctor has of his business when he begins to practice. For 23 years he has been a practical bee-keeper, producing both comb and extracted honey, rearing bees and queens for sale, doing the work with his own hands, becoming an "all round" bee-keeper, and, with the exception of the last few years, supporting his family from the proceeds of the apiary. For twenty years he has been reading all of the bee journals and books published in this country; has attended nearly every bee-keepers' convention of a national character; has visited scores and scores of bee-keepers in their own homes; received and answered thousands and thousands of letters from bee-keepers; in short, he has enjoyed, and still enjoys, a personal acquaintance with most of the leading bee-keepers of the country. This experience enables him to choose wisely in selecting matter for his journal; also to write from the standpoint of actual experience upon all subjects pertaining to practical bee-keeping; to criticise, or commend, if necessary, the views of correspondents. As he runs no supply trade in connection with his journal, his mind is free from even an unconscious bias; and his views in regard to hives, implements, methods, and devices are wholly disinterested.

This sounds boastful and egotistical, did you say? I will admit it. I know it. At the same time, I know it is *true*. I have been, for years, a successful, practical bee-keeper, supporting my family from the proceeds of my apiary, and I know exactly the kind of material to put into a journal to help a man in that position—I have "been there" myself. If you have any doubts on this point, they can be very cheaply dispelled. Send me the small sum of $1.00, and I will send you twelve back numbers of the Review, the Review for the rest of this year, and then for all of 1899. If you prefer, you may send 10 cents for three back numbers, and the ten cents may apply on any subscription sent in within a year. A coupon will be sent entitling you to the Review for 90 cents.

W. Z. HUTCHINSON, = = Flint, Mich.



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WALTER S. POUDER,
512 Mass. Ave., Indianapolis, Ind.
In writing, mention Gleanings.

Dovetailed Hives,

Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.

J. M. JENKINS, Wetumpka, Ala.
In writing, mention GLEANINGS.

A Hen's Nest
is only interesting when full of eggs. The number of eggs depends upon what you feed the hen. She will lay twice as many if fed **Green Cut Bone & Mann's Granite Crystal Grit.**
MANN'S NEW BONE CUTTER
prepares bone in the best way with least expenditure of money and muscle. We make Bone Cutters, Clover Cutters, Feed Trays and Grit. The best of their kind. **Cash or Installments.** Catalogue **Free.**
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Pekin Ducks, $1.00 Each.

We have the largest and finest flock of Pekins we have ever raised, and in order to reduce the number quickly we will for a short time sell in lots of five or more at $1.00 each. They are the genuine long-bodied Pekins, and will surely please. Order quick.

We are headquarters for

"Every Thing for the Poultry-yard."

Largest and cheapest stock of Poultry Supplies in the United States; patentee and manufacturer of New American Incubator and Brooder. Pure-bred poultry at living prices. Send for our catalogue. It's a pretty book of 80 pages, finely illustrated, full of information. You need it. It's free. Address

Geo. J. Nissly, Saline, Mich.

In writing advertisers, mention GLEANINGS.

THE BOWEN CableStay
Machine $10
TO BUILD THE STRONGEST AND BEST WIRE FENCE.
16 to 24 Cents per Rod.
No farm rights, royalties or patent stays to buy. AGENTS WANTED. Write for circular.
The Bowen Cable Stay Fence Co.
NORWALK, OHIO, U. S. A.

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1,000,000 Peach Trees
grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

32 Greenhouses filled with Roses, Palms, Araucarias, Ficus, Dracenas, Pandanus, etc. Will have immense stocks of best Holland Bulbs for fall. 45th year. 1000 acres. Correspondence and personal inspection solicited.

THE STORRS & HARRISON CO.,
Box 1, Painesville, Ohio.

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One Man with the UNION COMBINATION SAW
Can do the work of four men using hand tools in Ripping, Cutting off, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, Jointing Stuff, etc. Full line of Foot and Hand Power Machinery. *Sold on trial. Calalog free.* 1-24ei
Seneca Falls Mfg. Co.,
44 Water St., Seneca Falls, N. Y.

DON'T SWEAR as you did last season that you will buy an Incubator and then not do it. Nothing like **starting right.** If you want to **start right and stay right buy the**
Reliable Incubator.
Made so the veriest novice can't fail with it. Light the lamp, the **Reliable** does the rest. We send a 224 page book for 10c in stamps that tells all about it and the **Reliable** Poultry Farm.
RELIABLE INCB. & BROODER CO. Box B 49, Quincy, Ill.

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OUR INCUBATORS EQUAL THE BEST..
They have all the latest improvements and are sold at very low prices and **GUARANTEED** to please every customer. Send 6c. for our 148 page catalogue which contains full descriptions of our extensive line and tells how to raise poultry successfully. Send for it at once.
DES MOINES INC'B CO.
Box 503 Des Moines, Iowa.

In writing, mention Gleanings.

SOLD ON TRIAL!
Buy no incubator and pay for it before giving it a trial.
Many people have lost faith in incubators because they bought one that was never intended to hatch chickens—made merely to sell.
The Von Culin Incubators
are sold on trial subject to your approval. Simplest machine made. A child can operate it. **The biggest catalogue and "poultry pointers" book** published, sent for **5c.** Plans for Brooders, Poultry Houses, etc., sent on receipt of **25c.**
Von Culin Incubator Co. 8 Adams St. Delaware City, Del.

In writing, mention GLEANINGS.

A WASTE OF MONEY
is never desirable or justifiable. It is worse than waste to put high priced eggs in a poor, imperfect incubator.
240 EGG SIZE.
The MASCOTTE INCUBATOR
not only prevents such waste, but turns failure into success. Regulates perfectly as to **heat, and ventilation.** Guaranteed. Send at once for **FREE** catalogue.
Mascotte Incubator & Lumber Co., Box 18, Bedford, Ohio.

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HOW TO START
in the POULTRY BUSINESS and how to make it a complete success is the theme **of** our POULTRY GUIDE. Tells all about poultry houses, how to build, cost, &c., and how **to breed, feed** and **market fowls.** Treats also of the **famous CYPHERS INCUBATOR**
which is **delivered freight paid to every purchaser.** This machine requires absolutely no artifical moisture. **Send 10 cents** and get the book. Circulars **FREE**
THE CYPHERS INCUBATOR CO. Box 74, WAYLAND, N.Y.

In writing, mention Gleanings.

HATCH CHICKENS BY STEAM—with the simple, perfect, self-regulating
EXCELSIOR INCUBATOR
Thousands in successful operation.
Lowest priced 1st-class hatcher made.
Circulars free. Send 6c. for Illus. Catalog.
GEO. H. STAHL,
114 to 122 S. 6th St., Quincy, Ill.

In writing, mention Gleanings.

FOR SALE.
7000 Lbs. Fine White Extracted Honey.
Also **Southern Bloodhounds.**
ELIAS FOX, Hillsboro, Wis.

WANTED.—Your address for a free copy of my book on queen-rearing.
HENRY ALLEY, Wenham, Mass.

SPECIAL NOTICES BY BUSINESS MANAGER

"SUNDAY SCHOOL TIMES" CLUBBED WITH GLEANINGS ONE YEAR FOR $1.75.

We are pleased to be able to offer again to send *The Sunday School Times* along with GLEANINGS for 75 cts. extra, and you can take advantage of any other premium offer you wish at this rate. That is, if you want *The Sunday School Times* you can have it at 75 cts. by sending us your name and this amount before the end of December. The year begins Dec. 10, as the lesson is treated three weeks in advance of the date used. If you have no club in your school, here is a chance to get this excellent paper at club rate.

ORDERS ACCUMULATING.

As we go to press we have arrangements almost ready to start our wood-working department again, but have not actually started, and may not do so for several days. We have plenty to do, as orders have been piling up waiting to be run out when we get the wheels turning. One thing after another has tended to delay the completion of everything needed to get started. Prospects for trade next season seem excellent, from reports received from agents. We have quite a large stock of many staple goods made up and packed, yet many orders require something that has to be made.

Special Notices by A. I. Root.

THE FARMER'S HANDY WAGON.

We have used our low down broad-tired wagon, such as is advertised on page 894 of this issue, for one season, and it is a "handy" wagon indeed. In very muddy weather it does not work well on our clay soil, but at any other time it is worth all it costs to make good roads. It has smoothed down our roadways around our ranch as nicely as a roller made on purpose for road-making; and for smoothing up the highway for bicycle riders any community could almost afford to pay some farmer for drawing such a wagon around. Then in going across the lots, drawing potatoes, for instance, when the ground is damp and soft, as it has been during the past month or two, the handy wagon is almost a necessity.

GARDENING UNDER GLASS.

If your greenhouses, cold-frames, etc., have not yet been started up you should commence at once. Every sash—in fact, every square foot of glass—should be earning some money. With the glass alone, without any bottom heat, many things may be grown in our locality. The most important crop under glass will probably be Grand Rapids lettuce. Directions have been given so frequently we need not go over it again. But the ground must be made very rich; and raw stable manure right from the horses, is perhaps better and cheaper than any thing else for all foliage plants. In most localities spinach will bring as much per pound as lettuce It is never subject to disease, that I know of, and you can grow a crop without any bottom heat at all. It will, however, grow faster, and make nicer plants, if you have a little heat of some kind — stable manure, heat from a flue, hot-water pipes, or steam-pipes. But do not get spinach too hot. The same may be said of early bunch onions grown under glass. The Extra Early American Pearl we consider the best onion for this purpose. Where you do not have any heat, use the winter or Egyptian onion-sets. Early-frame radish is also a crop that finds ready sale in most localities any time during the winter.

Water cress is one of the easiest plants to grow, and it can be mixed right in with lettuce at the same price per pound. Early beets want a little more heat. They too can be grown without bottom heat, if you have some kind of protection to put over the glass sashes during the very coldest weather. A good deal depends upon banking up the sides of the bed, and over on to the edge of the bed with coarse manure, sawdust, or something of that sort. Corn salad is also a very easy plant to grow under sashes or in a greenhouse. Rhubarb and asparagus can be forced at any time after you have had one good freeze; and you do not need any glass at all for growing nice pieplant. Just take up the big roots after one good freeze, and put them in any kind of cellar. They do not need any light at all; in fact, you will get nicer stalks for pies where they are grown entirely in the dark.

It is pretty early yet to start any kind of vegetable-plants, unless you want a few tomatoes to try your hand at growing them under glass later on. For growing tomatoes, however, you must have heat enough so the temperature will never get below the freezing-point.

KIND WORDS FROM OUR CUSTOMERS.

I bought your A B C of Strawberry Culture last winter, and now have 12 rows, 30 ft. each, of as pretty and healthy-looking strawberries as one would care to look at—very promising. W. M. ANDERSON.

St. Louis, Mo., Oct. 5.

The queen came to hand all right. She is the kind of queen that makes one glad to see. I am glad that some one can raise fine large queens that look at least as though they would prove to be extra good ones.

Morrill, Minn., Sept. 16. A. T. MCKIBBEN.

The best imported Italian queen arrived O. K. Thanks for same. She is a nice one. I am well pleased with her. When I want the best of any thing I always send to The A. I. Root Co., and I always get it.

Lometa, Tex., Oct. 13. L. B. SMITH.

Mr. Root:—I hand you herewith $1.00, for which please extend my subscription to GLEANINGS for one year from expiration of present subscription, and don't you dare to miss a single copy unless I write you I can't pay you, and then I would not be *very angry* if you were to continue to send it. We—that is, the *bee-man* of the house, and by far our better half and self—read your paper with greater satisfaction than almost any other publication we take, unless it might be *The Youths' Companion*, and I doubt which we would stop first. S. L. PAYNE.

Westfall, Oregon, Nov. 15.

My good friend, I feel greatly complimented by being placed side by side with the *Youths' Companion*, and we will take great pleasure in marking your name on our subscription-list, "Not to be stopped until we have orders to do so."

A KIND WORD AND A VALUABLE FACT.

A. I. Root:—I wonder if you have any idea of the number of silent friends you have. I am one of them. I got the idea, when I saw you, that you had in a measure retired from very active participation in business; but you are so much in evidence that I wonder how you find time to accomplish all you do.

Referring to your letter from Yellowstone Park, in GLEANINGS of Oct. 15, I was in Boise, Idaho, last spring, and found a novel system of heating in vogue that appeared to be a great success. It was exactly what you suggest—the carrying of hot spring water through pipes exactly as we carry our drinking-water from the mountains. The charges were reasonable, and the service superb. The amount of heat is easily regulated. It is constant, day and night, summer and winter. It is a delightful heat. There is no trouble with burned air—no dust, no smoke, no expense for furnaces, stoves, fuel, and attendance.

If you wish to learn more about the matter you can undoubtedly get what you want by addressing the secretary of the Chamber of Commerce or Board of Immigration, at Boise. BUELL LAMBERSON.

Portland, Ore., Oct. 24.

PEOPLE WHO WABBLE; AND SOME KIND WORDS ALSO.

Mr. A. I. Root—Dear Brother:—I know it is presumption, but I hope it will not hurt you (as there is no person living who is acquainted with both of us at the same time), and it does me a "heap" of good to call you brother, and to feel that, in the peculiar bent of mind, we surely are very much alike, and differ from the commonality in that we get our lessons and draw our illustrations from the peculiar parts of things. It seems as if I can feel a sort of congeniality when I read our Home Talks, and it does me good. It begets more love for the ways of *right;* it helps my infirmities; it shows me that *home* is the place to begin to do right. I always go for Home Talks at once when I get GLEANINGS. In fact, I am a little like that other man who said he always began at the back to read GLEANINGS; but he said he did not like your theology, and I *do* like it very much. (Brother, does it not hurt you to hear people talk about religion and the Bible, the principles and words of our blessed Savior as some folks do?) And then I get so interested in the way you illustrate. That crooked crank is surely the best and most applicable thing you could have found. It gets close to everybody. Why, I could *feel* the wabble while I was reading, and I can feel it yet; but among wheels there are very few crooked cranks; but among the people, alas! too many of us are crooked, and wabble over against the pleasure, business, or feelings of somebody; and then, again, how few of us are willing to put up with the least wabble in somebody else! It's very unpleasant, and they can't learn to adjust themselves as your heel and ankle did. They want the thing straightened, and they would break or straighten it if they could only find some way to do so, and yet not be responsible for the mischief done. They demand perfection in others; and it is true we *need* models of perfection; but Jesus taught us not to look for them among the people. Call no man master, or lord, for one is our master, even God, our heavenly Father, and we all are brethren; therefore let's bear and forbear; give and forgive; love and be loved, for Jesus' sake.

Cumberland, Miss., Nov. 5. JAMES L. ARNOLD.

[My good friend, neither you nor anybody else ever need hesitate when you feel like calling me "brother." There is certainly nobody on the face of the whole earth, be he black or white, rich or poor, to whom I would not gladly extend a helping hand; and it always rejoices my heart to have anybody say he feels like calling me "brother," and extending the right hand of fellowship. I belong to humanity and to Christ Jesus; and I love my fellow-men because Christ loved them, and never hesitated to lend a helping hand to any one. Your very kind letter has brought me very close to you, dear unknown friend.]

CONVENTION NOTICES.

The tenth annual meeting of the Ont. Co., N. Y., Bee-keepers' Association will be held in Canandaigua, N. Y., Dec 8th and 9th, 1898. All interested in bees are invited to attend. An interesting program is in course of preparation. RUTH E. TAYLOR.

The annual meeting of the Ontario Bee-keepers' Association will be held in the city of Guelph, on the 6th, 7th, and 8th of December, 1898. There is every prospect of there being a good meeting and a large attendance, owing to there being other attractions in Guelph on these dates; namely, the Guelph fat-stock show, which has a continental reputation; the Guelph poultry and pet-stock show; the Experimental Union. Many bee-keepers have an interest in all these associations. All bee-keepers are cordially invited.

Streetsville, Ont., Oct. 20. W. COUSE, Sec.

Wants and Exchange.

WANTED.—To exchange GLEANINGS for 12 years back for honey, maple syrup, or offers. Make your own price. A. T. COOK, Hyde Park, N. Y.

WANTED.—To exchange apples, good keepers, $2.50 per barrel—3 bushels to the barrel—for honey, comb or extracted. J. B. MURRAY, Ada, Ohio.

WANTED.—To exchange 32 colonies bees in Root's hives, at Quebeck, White Co., Tenn., for bees in or near Oswego Co., N. Y., bee-supplies, bicycles, cash, or offers. E. J. GILLETT, Mexico, N. Y.

WANTED.—No. 1 white comb honey in 4x5-inch sections; also to furnish my hives and 4x5 sections for a share of the next honey crop, to parties within 100 miles of this city. Address *at once*

F. DANZENBAKER, Washington, D. C.

WANTED.—To exchange bicycle for Barnes' foot-power saw, or engine

ROBERT B. GEDYE, La Salle, Ill.

WANTED.—To exchange a good photo outfit, complete crayon-portrait outfit, and repeating rifle, for bicycle and offers. D. B. THOMAS, Odin, Mo.

WANTED.—A location for a custom saw and feed mill. WM. S AMMON, 216-18 Court St., Reading, Pa.

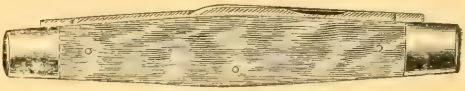
BIG PREMIUM OFFER.

Choice of the Below-named Articles Free for Your Own Renewal of Gleanings with $1.

Stop and Think What This Means.

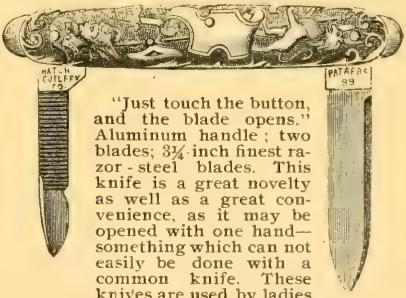
IT IS virtually a year's subscription to GLEANINGS for only 50 cts., as the premium is regularly listed at 50 cts. in our price lists. Of course the above liberal offer holds good only when all arrearages, if any, are paid up, and the $1.00 sent for the year's subscription in advance, the advance subscription only counting for the premium.

Queen-cell Knife, No. 278-N.



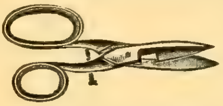
Two blades; brass-lined; German-silver tips; extra-fine steel; length, closed, three inches. We have this knife made expressly for us, and branded with our own name. You can't buy it at any other place on earth. It's the neatest pocket-knife made—a handsome present for either ladies or gentlemen. Excellent for cutting out queen-cells.

Automatic Knife.



"Just touch the button, and the blade opens." Aluminum handle; two blades; 3¼-inch finest razor-steel blades. This knife is a great novelty as well as a great convenience, as it may be opened with one hand—something which can not easily be done with a common knife. These knives are used by ladies and gentlemen through the United States and Europe.

Button-hole Scissors, No. 800.



These are 4¾ inches long; blade beveled; has screw on the side, adjustable for cutting different sizes; polished.

THE A. I. ROOT CO., Medina, Ohio.

CASH FOR BEESWAX.

We pay 25c per lb. cash, or 27c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 32c for *best selected wax. Old combs will not be accepted under any consideration.*

Unless you put your name *on the box*, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by *express*.

THE A. I. ROOT CO., Medina, O.

BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity —one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

Address E. KRETCHMER, Red Oak, Iowa.

In writing advertisers, please mention Gleanings.

Headquarters in the West for Bee-keepers' Supplies.

The Largest Business of the Kind in the West.

Thousands of hives, millions of sections, tons of foundation, and quantities of other stock sold the past season.

We sell the ROOT GOODS AT THEIR FACTORY PRICES, AT DES MOINES, IOWA.

1898 finds us in enlarged quarters with the largest stock and greatest variety of goods ever offered. All the latest improved up-to-date goods kept in stock.

ORDERS SHIPPED PROMPTLY. Estimates cheerfully given. Catalog free. Address

JOSEPH NYSEWANDER, Des Moines, Iowa.

TWO PAPERS FOR THE PRICE OF ONE

The **FARM JOURNAL**, of Philadelphia, a monthly agricultural journal of 16 pgs., sent **ONE YEAR FREE** for one subscription to **GLEANINGS** with $1.00, paid in advance, either new or renewal. In the case of a renewal, all arrears, if any, must be paid in addition to 1 year in advance.

The Farm Journal is now in its 20th volume, and takes the lead among all the *low-priced* agricultural journals of this country and of the world. It gives no chromos, puffs no swindles, inserts no humbug advertisements, lets other folks praise it, and makes good to subscribers any loss by advertisers who prove to be swindlers. The editor was born on a farm and reared at the plow-handles, and the contributors are practical men and women.

The regular price of this excellent journal is 50 cents a year, and it is well worth it; but by special contract with the **FARM JOURNAL** we are enabled to make the above very liberal offers.

THE A. I. ROOT CO., - - - MEDINA, OHIO.

Our Great Combination Offer!

The Ohio Farmer
and
Gleanings in Bee Culture for $1.10.

The *Ohio Farmer* stands in the very front rank of farm papers. It is edited by practical men, and among our exchanges in the agricultural line it is one of the few really good farm papers that we read. Either old or new subscribers may take advantage of this offer; but in the case of an old subscriber the money must be sent in before the subscription expires; or, if already in arrears, all back subscription must be paid up at the regular rates, in addition to the $1.10. Send all orders to

The A. I. Root Co., Medina, O.

Honey Column.

CITY MARKETS.

MILWAUKEE.—This market on honey is in very good condition, and demand is steady. The quality of the honey that is coming forward seems to be inferior compared with former seasons, and prevents free sales. All fancy lots and good condition meet ready sales, and of such we advise free shipments, and quote fancy, 11½@13; A No. 1, 11@12; No. 1, 10@11; dark and amber, 10@10½. Extracted, in barrels, kegs, and pails, white, 6@7½; dark, 5@5½. Beeswax, 25@27.
Dec. 2. A. V. BISHOP & CO., Milwaukee, Wis.

BOSTON.—Since our last report we have to report quite liberal receipts with but a light demand during the holidays. As a result stocks have accumulated somewhat, and prices show a lowering tendency. Still we hope for a better demand, with prices at present as follows: Fancy white, 14; A No. white, 12½@13; No. 1, 11@12; light amber, 10. No call for dark. Extracted fair demand, light supply. White, 7@7½; light amber, 6½@7; southern, 5@6.
Dec. 9. BLAKE, SCOTT & LEE, Boston, Mass.

CHICAGO.—Market is less active. There are now more offerings of comb honey than is being absorbed, hence some accumulation of consignments without any special change in prices; yet receivers are granting concessions to make sales. Fancy white, 13; off grades, 10@12; amber, 9@10; dark, 8@9; extracted white, 6@7; amber, 5@6; dark, 5; beeswax, 27.
R. A. BURNETT & CO.,
Dec. 8. 163 S. Water St., Chicago, Ill.

DENVER.—There is very little change in our market. Comb honey is moving fairly well, as it is more scarce than usual, owing to several carloads being shipped from this market. Can quote No. 1 white at 10½@11½. Extracted honey is the leader on this market with our trade. Can quote No. 1 white at 5½@6 in quantities. R. K. & J. C. FRISBEE,
Dec. 9. Denver, Col.

PHILADELPHIA. — Honey in comb is selling very freely, and higher prices are being realized. We quote fancy white at 16c in glass, 15 no glass; No. 1, 13; amber, 9@11; extracted white, 8; amber, 6@7; dark, 5½. Beeswax, 27. We are producers of honey—do not handle on commission. WM. A. SELSER,
Dec. 10. 10 Vine St., Philadelphia, Pa.

ALBANY.—Not much change in honey market to note. Fancy white comb 12@13; No. 1, 11@12; No. 2, 10@11; mixed and buckwheat, 8@9; extracted white, 6½@7; amber, 5½@6; dark, 5½@6.
MACDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Dec. 7. Albany, N. Y.

BUFFALO.—Demand for honey very good. Fancy, 13@14; A No. 1, 12@13; No. 1, 11@12; No. 2, 9@10; No. 3, 7@8; buckwheat, 7@9; extracted white, 6@7; tumblers, $1.10@$1 25 per dozen; beeswax, 27@30. Small packages of 6 to 10 lbs. each sell best in this market.
Nov. 30. W. C. TOWNSEND, Buffalo, N. Y.

CLEVELAND.—Below please find our market quotations on honey. Fancy white, 13@14; No. 1, 12@12½; light amber, 11; buckwheat, 9. Extracted, white, 7; light amber, 6. A. B. WILLIAMS & CO.,
Dec. 10. 80-82 Broadway, Cleveland, Ohio.

COLUMBUS.— Arrivals fully equal to the demand, and market largely steady. Fancy white, 13; No. 1, 12; amber, 10; buckwheat, 8.
THE COLUMBUS COMMISSION & STORAGE CO.,
Dec. 8. 409–413 N. High St., Columbus, O.

DETROIT. — Fancy white, 13; No. 1, 12; fancy dark and amber, 9@11; extracted white, 6@7; dark, 5@5½; beeswax, 25@26. M. H. HUNT,
Dec. 8. Bell Branch, Mich.

FOR SALE.—Amber fall honey in 58-lb. cans at 6 cts. Sample, postpaid, 6 cts.
R. & E. C. PORTER, Lewistown, Ill.

FOR SALE.—To close out quickly. I have 1000 lbs. white and red clover honey at 12½c; tumblers, 1-lb., 95c per dozen; fine light amber, 62-lb. cans, at 6¼c.
G. ROUTZAHN, Menallen, Pa.

WANTED.—To buy quantity lots of fancy and No 1 white comb honey, car lots preferred.
BYRON WALKER, Evart, Mich.

FOR SALE.—7000 lbs. fine white **Extracted Honey.** Also Southern Bloodhounds.
Elias Fox, Hillsboro, Wis.

NOTE THIS CHANGE.

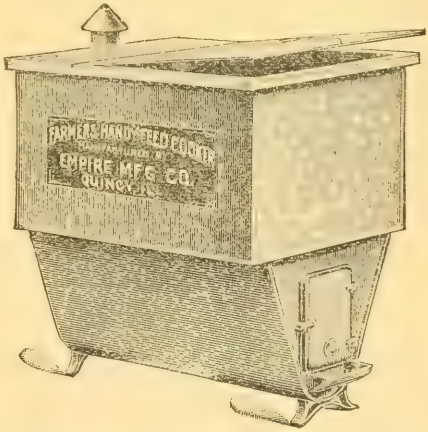
All the readers of "Gleanings" have not sent for sample box of Frisbee's Pure-Alfalfa-Clover-Honey Cough-Drops, and we want you to try them. For the balance of the year we will send a full-size box for 5 cents, not quite their cost and postage; or a case, 36 boxes, $1.80, *prepaid.* Yes; and the honey-recipe book too, if asked for.
R. K. & J. C. FRISBEE, Box 1014, Denver, Colo.
Reference, A. I. Root.
In writing, please mention GLEANINGS.

The A. I. Root Co.'s Goods At Their Prices.
Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.
Cash for beeswax. **M. H. HUNT, Bell Branch, Mich.**

FOR SALE. Twelve acres of good land on Sarasota Bay; 3 acres under cultivation; about 50 young trees doing well. This is a tip-top locality for bees and poultry. For particulars address **E. WOOLEY, Hayden, Manatee Co., Fla.**

Farmers' Handy Feed-cooker.

Reader's attention is called to this device, which is sold at $12.50 for 50-gallon capacity. By feeding poultry and animals cooked food during winter at least one-third of the feed is saved; also having stock in a healthy condition, preventing hog-cholera among your hogs, and insuring the hens laying freely during the winter. On application to the Empire Manufacturing Co., Quincy, Ill., a catalog giving full description may be obtained. They are made in all sizes.
In writing advertisers, mention GLEANINGS.


FARMERS HANDY FEED COOKER
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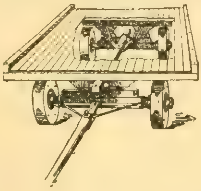

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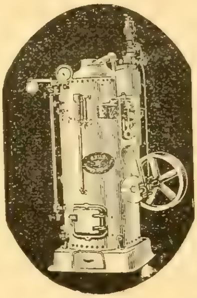

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

J. O. GRIMSLEY says in *Ruralist* that there are various causes for mailed queens giving way early, the main one being balling when introduced.

WEISELRICHTIG is a word the Germans use to signify that a colony has a good laying queen. It would be convenient if we could express the same thing in a single word.

THE MOST PROMINENT feature of November *Review* is the absence of Hasty. Hope he hasn't been carrying his dietetic experiments too far. His writings are always refreshing.

SPEAKING OF wild ground-cherries, friend A. I., I once had some dried in my pocket that tasted very much like figs. I never could repeat it, but I believe some one who knew enough might.

W. W. SOMERFORD'S plan of ventilation, p. 875, by raising the cover, is intended by him "for extracted honey." A caution may be necessary to prevent any one from trying it with comb honey. Sections near the opening would not be promptly sealed.

MR. HOOKER reports in *British Bee Journal* that he boiled *in vacuo* thin honey beginning to ferment. The ferment was removed without hurting the aroma, and the honey became thick and of good quality. Possibly that's no better than to give the honey its time on the reservoir of a cook-stove.

TWENTY PER CENT more honey is needed to winter in a frame hive than in a skep, says *Rucher Belge*. Doesn't that mean that a skep is 20 per cent better than a frame hive, for wintering? [It is evident that the man who made the statement kept bees in straw skeps. How natural it is for our opinions to be biased by what we use!—ED.]

YOU DOUBT, Mr. Editor, page 870, if any one would take the job of gathering 100 lbs. of propolis at $5 a pound. If my bees were all Punics I think I could easily gather that much. In 1897 I think I threw away 25 lbs. scraped from sections. I'd be glad to get 50 cts. a pound for it. [Would you take a contract to furnish 100 lbs. during the coming summer, at 50 cts. per lb., and, failing to furnish that amount at the time specified, give a forfeit?—ED.]

AT THE OMAHA CONVENTION, of 21 who had tried both small starters and full sheets in sections, 17 preferred the full sheets. [I remember this; and I wondered at the time if this preference was not based wholly on the fact that bees did quicker work with full sheets, and perhaps made better-looking combs.—ED.]

REFERRING to an item on p. 886, haven't I seen the statement in some bee-journal that hives would go up 25 per cent? [Perhaps so; but I was not aware that any such statement had gone forth. All I know is that we do not expect to raise prices on our own goods. Of course, there will be, as every year, some fluctuations of minor importance.—ED.]

I WAS ONE of those who got caught by the cold weather. Nov. 2, 3, 4, and 5 my bees flew. Then the weather kept getting colder, but I thought surely another warm day would come. Nov. 22 it was 15° above zero; 23d, 6°; 24th, 3°. I couldn't stand the strain any longer, and took the bees in the 24th. Glad I did, for it's been cold ever since. But I wish they had been taken in Nov. 6.

DOOLITTLE says, in *Progressive*, that he has modified his views. If he were starting afresh he would prefer the ten-frame Langstroth to the nine-frame Gallup, providing he was where he could cellar them. But he has no use for any thing bigger than a ten-frame L. [The best evidence of one's candor is the fact that he is willing to acknowledge a change of views occasionally. I always feel a little bit shy of accepting the opinions of one whom I never knew to change his mind.—ED.]

I SHALL BE GLAD to believe, Mr. Editor, that it is necessary to boil foul-broody honey only "several minutes;" but please remember that we have the following to face, which stands yet as a fact: Prof. Mackenzie secured growth from spores after they had been kept at 212°—not approaching, but *at* 212°; that is, they were brought to a boil, and *kept boiling for two full hours.* If there is no mistake about this, is it safe to advise less than something more than two hours? [The only question in my mind is whether these scientists did not make a mistake; and ought their single scientific experiment to overbalance the results of practical experience for years?—Ed.]

I MELTED a finished pound section of honey, collected the wax, and it made a marble a little more than an inch in diameter. [Very possibly the next section of honey that you may have melted would have a larger or smaller ball of wax. I know that several different sections from different localities that I tested years ago varied considerably. The lightest comb came from Colorado, and the heaviest from a locality where the honey season was slow and the bees had time to chink in wax. —Ed.]

"AS TO THE LENGTH of time it takes for the spores to develop into *Bacillus alvei*, no one knows," says GLEANINGS, p. 883. Surely Dr. Howard and Prof. Mackenzie, who raised crops of bacilli from spores, ought to be able to tell something about it. And while you're about it, Mr. Editor, won't you please ask them how long foul-broody honey should be boiled to make it safe to feed healthy bees? [All right. Prof. Mackenzie and Dr. Howard will please take notice that we should be pleased to have one or the other of them, or both, tell us how long it takes spores to develop into *Bacillus alvei*.—Ed.]

A WRITER in *British Bee Journal* hints that bees may be made immune to foul brood by some sort of anti-toxin treatment. Sort o' vaccinate 'em. [The vaccinating would have to be done before the bees were ' born." I know that a few claim that *Bacillus alvei* is found in the stomachs of adult bees. It may be that this germ life affects them adversely; but I could never see but that the bees in some of our worst foul-broody colonies were just as healthy as any we had in the yard. Foul brood is a disease, as its name indicates, of the *brood;* then the anti-toxin would have to be administered—well, when?—Ed.]

CHESHIRE says that, in a case he carefully examined, the bees used a pound of wax in constructing 35,000 cells; but an American writer found 50,000 cells constructed from the same amount of wax. That makes somewhere from 2.6 to 3.8 ounces wax used for a Langstroth frame, or from 21 oz. to nearly 2 lbs. for an eight-frame hive. [This only emphasizes the point I made in answer to another Straw in this issue, that the amount of wax for a certain capacity of honey varies considerably. I have no doubt that both Cheshire and the American writer are entirely correct in reporting 35,000 and 50,000 cells made from one pound of wax.—Ed.]

THAT POINT made by N. E. Doane, p. 883, that bees are carried more safely if most of them are bagged, is worth noting. The bees in the bag haven't the same chance to overload with honey and then spew it over themselves. [Yes, since you speak of it, it strikes me that more emphasis should have been placed on this point. Bee-keepers, when moving bees, are inclined more and more to the use of a screen leaving three or four inches above the combs. If it is a very hot day the bees will leave the combs, and cluster in the space above; and the danger of their overloading and spewing all over each other is very much less.—Ed.]

AS POSTSCRIPT to your footnote, p 880, W. Z. Hutchinson says he buys sections and shipping-cases, but makes his hives. He is "near planing-mills that have good machinery and competent workmen," with lumber cheap, so it costs him much less than to send to a bee-hive factory. But that's hardly making his own hives. I suppose the only difference between him and me is that he gives special instruction how his stuff shall be cut. He says wisely that each one must decide for himself which is best for him. [W. Z. Hutchinson does just the right thing; but there are few, comparatively, who are so favorably situated. By far the great majority are out of the vicinity of cheap lumber. Indeed, they could buy the hives all made up in the flat about as cheaply as they could buy the same superficial surface of plain lumber.—Ed.]

C. P. DADANT says, in *American Bee Journal*, that bees "fare much better, and keep warmer, if they can keep the bulk of their cluster below the honey, on empty cells." Our Canadian friends report good success with combs sealed solid to the bottom. Now, who can give positive testimony as to the relative merits of the two plans tried side by side? [I can not give any testimony either way. We have wintered bees successfully on combs built solid to the bottom-bar, and on combs having a sort of clustering-nest below the honey. I remember particularly one winter, when, for some reason I do not now recall, we fed late, and then fed in such large feederfuls that the combs of some colonies were solid slabs of sealed stores. I did not intend to give any of them quite so large doses, and I was fearful that the following spring would show losses; but I could not see but those colonies with solid combs of sealed stores wintered as well as those that had time to prepare a brood-nest. Notwithstanding, I believe the ideal condition for good wintering is that pointed out by C. P. Dadant.—Ed.]

"IN THE EATING of extracted honey such a large quantity of sweetness is brought in contact with the organs of taste all at once as to overtax them, so to speak. In eating comb honey there is a gradual breaking-down of the cells, the honey is released in small quantities, and the 'sweetness long drawn out' is not only poetical but really real." So says Editor Hutchinson. Bro. H., do you believe you can detect the slightest difference between comb and extracted when spread on bread or biscuit, *provided* the honey is of the same quality in each? And when a chunk of comb honey goes into my mouth, there's no cell by cell breaking down or "long drawn out" sweetness, but a grand crash of the whole structure "at one fell swoop." [I can not give up the idea that wax has a peculiar flavor of its own. Whenever I go down into our wax-room and place my nose close to some nice new foundation I am reminded of boxes of scented soap. Now, if the olfactory nerves can detect something in wax, why not the organs of taste?

Notwithstanding I prefer thick extracted for my own eating, I am willing to forego the additional flavor in the wax. I do think that comb honey is more apt to have a better flavor than the average extracted. There, that is my opinion.—Ed]

GENERAL CORRESPONDENCE

LARGE HIVES; DISADVANTAGES.

A Very Fair Statement of their Good and Bad Points; why Mr. Dadant Prefers the Large Hives in Spite of their Unwieldiness.

BY C. P. DADANT.

I must own up that there is nothing perfect in this world, and that the large hive is no exception. In the first place, it costs a great deal of money, and that is a big point for a beginner who may not like bee culture after he has tried it a year or two. While an eight-frame Dovetailed or Simplicity hive costs about $1.25, the large hive we use costs something like twice as much. Then they are not suitable for comb honey unless under special management, because, if left to themselves, as Doolittle says, the spaces that are not filled with brood, in case there is more room than the queen can fill with brood, are filled with honey by the bees, and the result is too much honey in the brood-combs and too little in the supers, especially in an inferior season.

Again, those large hives are very cumbrous. It is out of the question for one man to carry one of them from one place to another in the apiary, unaided, even if it does not contain any bees; for it is voluminous as well as heavy; and when the bees are to be put into the cellar for winter it is fully twice as much labor to take in a given number of large hives as the same number in small hives, or eight-frame Langstroth bodies.

But the worst thing is transportation. In a good large wagon we could easily place two rows of eight-frame hives and about seven in each row. If they are carried with supers and only a shallow cover you can put in two tiers of them, which makes about 28 hives in a load, while 12 of our large hives make a big load for a wagon. In shipping by rail the cost of transportation is outrageous anyhow; but one of these hives costs about twice as much as one of the small ones, being fully twice as heavy, and no one short of a Vanderbilt or a Rockefeller can afford to have such a hive sent by express, for the express companies' rates on such packages amount to a small fortune, and they have still added the war-stamp, which they demand of their customers, and this, by the way, in my opinion, is neither honest nor patriotic. What do you think of it?

The objection of the great cost of shipment of our hives is such that we took special pains to make lighter hives when we shipped bees for breeding, and it is quite probable that our customers still thought our hives too expensive in this respect.

Now, Mr. Editor, I believe this is all. I assure you I can't think of any other objections to the large hives, and I made the case as black as I could. It is true I make a poor State's attorney in putting the case before the jury, for the people as against myself, and it would probably have been better to let Hutchinson do it. He surely would do it better.

But, hold on! I can not be content to let the case rest in this way; and as I believe I have a little room left in your paper to make my article of average length I will beg leave to add a few words in defense of my position, and explain why I stay with the large hives in spite of the enormous defects mentioned.

The hive is too large for transportation, but we do not transport it except in rare instances. We consider a hive a fixture, after the bees have been put into it, and we see no more need of transporting it about than a house. We have hives that have certainly been in the same spot, unmoved, for ten years, perhaps fifteen. If we wanted to carry on migratory bee-keeping, or move our bees to and from our out-apiaries, as Dr. Miller does, this point would have much more weight; but we have never practiced any such thing; and as to cellar wintering, which we have not practiced for some ten years, we consider it of small import whether it takes two men or one for half a day twice a year, if our profits are increased thereby. The hive could be made much lighter than we make it, by having a cap or cover fitting over it dovetailed, or simplicity fashion, instead of a telescoping cap; but we have tried both, and no one can run fast enough to catch up with us to make us a gift of such a hive for our use. We want the overlapping cover for several reasons. This being outside of the scope of my article I will return to the question. You understand my position — I want the hive to stay there like a hog-shed or a chicken-house, and its weight concerns only those who expect to move it about.

As to the cost, I do not believe, if we look at all sides, that it is much greater to the apiarist. With the small hives many more swarms will be harvested, and there is need of about as many empty hives as you have colonies of bees; while with the large hives ten per cent of the number will be sufficient. But, put it at twenty per cent, or, if you like it better, say that as many hives will be needed as with the small hives, and let us see what it will cost. A hive, if well made and well painted, will last thirty years. We have two dozen in our apiary here that were made in 1867, hence are 31 years old, and some look sound enough for another 30 years. It is true, they have been kept sheltered with a roof; but the roof costs only a trifle when it is made of cheap lumber. The additional cost of a large hive, if double that of a small one, will represent, in interest and sinking fund, between ten and twenty cents per year, or one to two pounds of honey. Is it likely that I can raise this much more, if we consider the better facilities for wintering, the less danger of spring dwindling, and the greater scope given to the queen if she proves fertile? In a word, am I not better off at that difference of cost with a hive that can be made as small as any one can wish it or as large as may be needed to accommodate the best queen? I leave your reader to reply, and decide in his mind whether I am right.

I see that I have not yet considered Doolittle's objection, which is of some weight. I will consider it in my next, and will also give my ideas as to the future of the large hive.

Hamilton, Ill.

* * *

SOUTHERN HONEY.

Honey from all Portions of the United States Compared; Honey from Cuba, and its Quality.

BY O. O. POPPLETON.

It looks as though many bee-keepers have very mixed and crude ideas about the quality of honeys raised in the South as well as in Cuba. See record of discussion at Omaha, on page 626, in the *Amer. Bee Journal:* also editorials in GLEANINGS, pages 771 and 805, and in the *Amer. Bee keeper*, page 195. Possibly I can add a mite toward straightening out the tangle of ideas.

The honey region of the North is a comparatively narrow section across the continent, and there are less than a dozen species of flowers that yield large enough quantities of surplus honey to be a factor in our general markets. The South furnishes a much larger variety of honey-yielding flora. There are at least two main reasons for this. One is, the greater diversity of soil; and the other is, that the nearer one gets to the tropics, or what many call the frost-line, the greater the variation in vegetation within short distances on a north and south line. The southern part of our country is so near this frost-line that radical changes in plant growth occur within short distances. One can journey on a railroad train, between sunrise and sunset of any day, and not a single flower that yields honey where he started from in the morning will be found where he is at night. There are three sections in Florida, in which the honey-flora of each differs widely from that of the others. A large part of the honey from Texas differs widely from that from any other section of the South. Honey from the hill region of Georgia, around Atlanta, differs from that obtained 200 miles either north, south, or east from that place. The conditions outlined above are true all over the South. I doubt whether there is or was any one, unless it might have been the late Mr. Muth, who was fully posted on all the different kinds of Southern honey.

Each kind of honey obtains its own distinctive flavor from the flower that yields it; and it follows as a matter of course, that, as the different varieties of flowers that yield surplus honey in the South are many, so the different kinds of honey, each with its own distinctive flavor, are also many. There is no single kind of honey that is general to the South, as is white clover, basswood, or buckwheat general to the North. We have all kinds of flavor in our Southern honey, grading all the way from the mildest honey I know of to the strongest, from the whitest to the blackest, and from the extra light in weight to the heaviest.

A study of the conditions which I have only outlined shows that it is quite impossible to have a standard for Southern honey, each one of quite a number of sections having its own standard, which differs from the standard of all other sections. This is one reason why there are such diversities of opinion regarding the quality of Southern honey. Nearly all of us are prone to judge any general subject by the few conditions bearing on that subject coming under our own individual observation, without any investigation of the whole subject, and this is why so many of us have judged all Southern honey by the few samples we have seen.

It is a much simpler matter to get at the facts regarding Cuban honey, as the kinds of honey from there are so much fewer in number. At least two-thirds or more of all the honey we shall get from Cuba comes from a single species of flower, the so-called bellflower. This honey is almost exactly like white-clover honey, both in color and body, but is a trifle milder in flavor. I am inclined to think that, as a marketable honey, it will be a little below white-clover honey, but above that from basswood. While I was in Cuba we sent Mr. Muth about 40,000 lbs., a good deal more than half of it being this kind of honey. He has told me that his customers took it readily in place of white clover — much better than they would have taken basswood honey. I have seen but little California honey; but if what I have seen are fair samples of honey from that State, then the bellflower honey from Cuba will equal if not excel it as a marketable honey. Those who are so favorably situated that they can find a home market for their honey in the country and small towns will hardly feel any rivalry from Cuban honey; but those of us not so situated, but who have to sell in the general markets, can not help finding such rivalry a serious matter.

The rest of the honey from Cuba is of an entirely different character, being dark and with very strong flavor — not as good a honey either in body or flavor as is buckwheat honey, but will probably be just as acceptable to the bakers, who seem to be the principal consumers of all kinds of dark strong honey. Should very many American bee-keepers set up business in Cuba I think Mr. Coggshall, as well as a good many more of us, will find their rivalry a much more serious matter than we shall enjoy.

Stuart, Fla., Nov. 19.

[This article will cover a good many points about which there has been a thirst for more knowledge. I know of no one more competent than our friend Poppleton to give us the facts.

The bellflower honey he speaks of is of very fine flavor. If I were to offer any criticism it would be that it is *too* mild. There are a good many in the North who are educated to prefer basswood honey because of its strong minty taste; and then there are others who dislike this taste, and prefer clover. But I should say that bellflower would compare in body, color, and flavor with the average white honeys on the market. The consumer would generally accept it as clover or basswood, although the expert bee-keeper would be able to recognize the difference.

About Cuban competition, I suspect we'll have to "grin and bear it." If honey can be produced there for 2 cts. per lb., and almost the year round — well, it's too big a problem for me to fathom.—ED.]

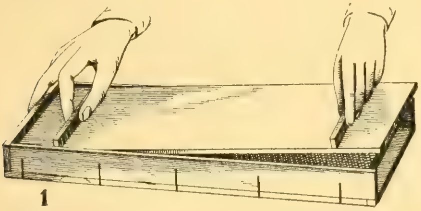
* * *

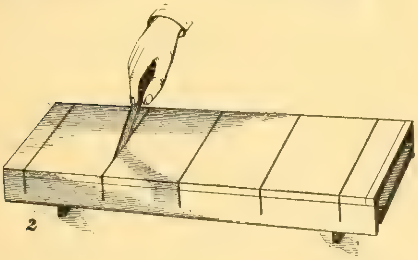
FOUNDATION FOR SECTIONS.

How to Cut Up in Full Sheets.

BY F. DANZENBAKER.

Mr. Root:—I send you a cut of the form I use in cutting foundation for the 4x5-inch sections. Fig. 1 shows its position with eight sheets or strips of foundation placed straight and even against the side of the form, with the cleated follower being closed in over the same.





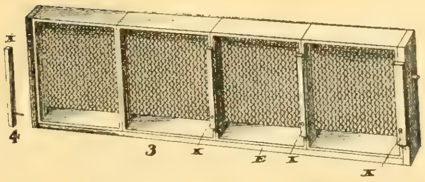


Fig. 2 shows the form reversed, resting on the cleats of the follower. The weight of the form bearing on the sheets holds them securely in place while the sharp thin-bladed knife is drawn with very light quick strokes through the scores, cutting the sheets of even uniform size, and true square for the 4x5-inch sections. When the form is taken off, the 32 pieces, just enough for a super, are left on the follower.

The two outside scores are for trimming off the bruised ends of the sheets, so that all are true and smooth alike.

Fig. 3 shows these full sheets of foundation fastened *only* at the top of the sections, with a free bee-space under the lower edge. The sheets are 3½ to ⅝ in. wide, or ⅛ to $\frac{3}{16}$ less than the inside width of the sections, that they may swing freely until built out and fastened by the bees.

When one edge of the foundation touches the section, and is fastened by the bees so it does not expand with the free edge as it is built out, the latter will wind or curl out to the separators, and may be fastened to them, marring the sections. To avoid this a hot knife-blade should be passed along the full side of the sheet, or the section may be held on the side, and the foundation swung out on the hot plate of the Daisy fastener an instant, to melt off the edge so it will be as free as the opposite side. With this precaution no sections will be fastened to the separators. If the supers are level sidewise, the sections will be finished as straight and true as planed boards.

No bottom starters are used or needed in thin sections. In a super properly furnished they are a perfect nuisance.

Fig. 4 shows a bee-space strip ¼ inch thick by 4 inches long, with a ½-inch wire nail through the lower end. The free end at the top can be moved to suit till the super is wedged up, when it will stay in place. Two nails may be used if preferred. X X X shows how they are placed when in use, to afford a bee-space with plain sections used without separators. When sections average so wide as to overcrowd the super, by using a set of these in place of a fence the needed room is saved without trouble, as they may be used in each alternate row with fences, when full sheets of foundation are used in thin sections.

Washington, D. C.

[When Mr. Danzenbaker was here recently he showed me his method of cutting foundation up in squares. As soon as I saw it I was convinced it was the best device that had yet been gotten up, although somewhat similar to some of the other foundation-trimmers.—ED.]

* * *

REQUEENING.

Superiority of Good Queens in Poor Seasons; Black Bees Preferred, and Why.

BY HARRY S. HOWE.

Mr. Editor:—One of the advantages of this poor season has been the chance to study more closely some of the problems of bee-keeping. One of the points that impress one strongly in extracting an apiary in such a season is the marked difference between colonies in the amount of honey stored. When honey is coming in fast there does not seem to be this difference, or at least it is not so noticeable, while the poorer the season the more pronounced becomes the difference.

It seems as though some colonies said, "Well, we can't get enough for winter anyway, so we might as well stop now as any time," while others seem to work the harder under adverse conditions.

Last summer I had a chance to keep in touch with about 1000 colonies, and to notice which ones were doing the work. Of course, I did not see all of them every time they were worked, but I did see them often enough to make some comparisons.

One or two things were so evident that one seemed to run against them forcibly every time an apiary was extracted. One was, that the young queens were the ones that gave the results. On an average, the queens that were raised after the honey-flow was over last season were the best. There were some exceptions to this, due to other causes. For instance, the best honey-producing colony in my Danby apiary had a queen that was two years old; but she swarmed early, and the hive was set on the end of a row where it had an extra chance, which was further helped by a part of another swarm going in with them.

The queens raised in the spring do not have a good chance, for they are usually in nuclei which do not get in good order until along in the season.

Another thing that stood out prominently was this: For years I have bred my queens from the best honey-producing colonies, yet this year the colonies that gave the best crop had Southern queens or their daughters. That is, my strain of blacks bred for honey did not do as well as some other person's strain of Italians or Carniolans bred for points, I suppose. This seemed to be due to the difference in races. The Carniolans seemed, if any thing, rather ahead of the Italians. The pure bloods of either were ahead of the mixed races.

These are the opinions I formed in extracting, where only once in a while a colony would have enough to pay to take it off. It happened several times this summer that we would go to one of the further apiaries, and then not find them filled. In such a case we often went over the lot and extracted the best ones so that they would not be crowded before the next trip. Then after the usual time for the honey-flow to stop we had a few big days so that the last emptying was the best, some of the apiaries having the larger share of the combs all capped over. Here again was there the same striking difference between colonies.

One reason for my keeping black bees has been that I can work them faster. They shake off from the combs better, and smoke down quicker, than the Italians, whose superior gentleness has not seemed to make up for their slowness. When I am convinced, as I was this season, that they will get enough more honey to pay, of course I shall have to have "fancy stock."

To show that I am not alone in this change of opinion I will quote from W. L. Coggshall, who says he will buy $50.00 worth of queens in the spring, which, with what he now has, will put his apiaries in pretty good condition as regards breeds.

Another point I wish to mention is that there are some symptoms leading toward a change of opinion on the hive question in the Howe family, but it is too early yet to tell how it will end.

Ithaca, N. Y.

[I will explain that Harry Howe is Coggshall's "lightning operator." He (Harry) is Coggshall's head man, and is a Coggshall operator through and through all except the kick act. Mr. Howe is observing, energetic, and a hard worker; indeed, I doubt if there is a man in the country who can handle as many colonies in a given time as he.—Ed.]

THINGS H. R. BOARDMAN DID NOT SEE IN MICHIGAN.

BY GEO. E. HILTON.

First, many of us are disappointed that H. R. confined himself so closely to the railroads, and failed to call on us. We think the object of his visit was largely lost because there are others besides Dr. Mason, Mr. Fowls, and the folks at "Rootville" who can talk, and they produce something besides "bug-juice," and have ideas too. The above is a gentle reminder that, if friend Boardman should come to Michigan again, he will be expected to pass over some of the railroads that don't confine themselves to swamps and "pine burnings," and call on some of the bee-keepers of Northern Michigan. He says he boarded the train Aug. 25. Yes, I remember the morning, as I was 52 years old that same day. "Billed for Petoskey, Frankfort, etc." Now, if he went to Frankfort he passed through Thompsonville, Benzie Co., and when there he was within five miles of nearly 500 colonies of bees, and within 1½ miles of the best-equipped yard in the State (see *Bee-keepers' Review* for September). Had he gotten off here he would have found tons of raspberry and willow-herb honey (yes, we have our bees strong enough to gather the raspberry honey, and with us it is a never-failing source).

I hope the people at Harbor Springs will not detect those two boys who said the town consisted of a store and two apple-trees. The fact is, they have a very lively little town over there; but there is a spirit of jealous rivalry over a county-seat matter that induces just such remarks. Had he been on the Harbor Springs side he could have heard similar remarks about Petoskey.

Yes, there are some bees around Manton. I am glad friend B. got a glimpse of our yard. Judging from the amount of goods I ship there, I should say there are several hundred colonies. In fact, I am thinking strongly of going up there, with a view of arranging to ship a car direct from factory.

Come again, Bro. Boardman, and get acquainted with us Wolverines, and we will show you something *new*.

Fremont, Mich, Nov. 19.

Symposium on Fences and Plain Sections.

Do They Produce Better-filled Boxes? Is there any Ridging of the Comb Honey? Various Constructions of Fences; Some Criticisms and Suggestions.

BY E. R. ROOT.

A year ago last August I made my first acquaintance with the fence, and what may be called a modification of the present plain section, at Mr. Morton's. I was immediately impressed with some of their salient features, and came home with the determination of bringing them before the bee keeping world. I said I became acquainted with the fence a year ago last August. I knew that Mr. Danzenbaker had something similar the year previous, and that B. Taylor and Oliver Foster preceded him; but, as Samantha Allen would say, I did not "sense" their value till the time above stated.

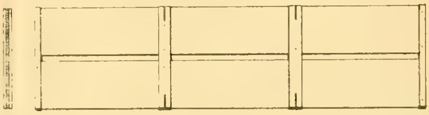
Along about this time it appears that W. Z. Hutchinson was studying on the same problem. He too had noticed how well plain sections were filled, and showed some of them in the *Review* about the time I began to talk about them in GLEANINGS.

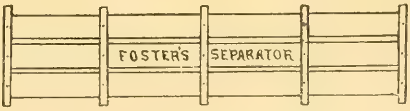
From that time to this a great deal has been said, both pro and con; but, in spite of all that has been written, there seems to be much that is not understood. There has been a strange mixture of fact and fancy, honest enthusiasm and prejudice; and through it all it has been difficult at times for the average reader to tell just where the truth lay. But during all this time I felt sure that the experience of Miles Morton, Francis Danzenbaker, L. A. Aspinwall, the late B. Taylor, Oliver Foster, and others who had tried this kind of section, might be, to a very great extent, relied on; and, nothing daunted, I banked my expectations — yes, my very statements — on the experience of these men. But still there were some doubting Thomases who threw out this or that objection, so much so that at times I myself began to wonder whether we had not made a mistake in pushing what I had felt all along was a great improvement, the other fellows to the contrary. But as months rolled by, and as reports began to come in from every quarter, my doubts as well as the doubts of some honest doubters were dispelled; and, to make assurance doubly certain, I traveled this summer and fall several thousand miles to see the honey in plain sections, and to talk with the men who produced it. Of course, I did not go all this distance simply and solely to learn about the new sections; but everywhere I went I took particular pains to inquire about them; and now I propose to place before our readers the results drawn from a large correspondence and from much traveling and observation; and in doing so I shall endeavor to state the facts exactly as I have found them.

At the outset I will state that there have been a few adverse reports; but when I came to simmer them down I found that, in nearly every case, and I do not know but in all, the unfavorable result was owing to the faulty construction of super or fences. For example, the S fences we sent out last season were not properly constructed; but as they represented a very small percentage of the total number of other fences differently constructed, very little harm, comparatively, was done. The S fence was designed to fit the old-style supers, but in actual practice it did not do so; and, as a consequence, bee-spaces between the sections and the fences were irregular, resulting, in a few instances, in the combs bulging beyond the face of the sections; but in every case, so far as I can remember, where the regular supers and fences were used (the last named constituted perhaps nine-tenths of all the fences we sold last season) the results were generally favorable—so much so that we shall make little or no change in fences for 1899. But there were one or two minor defects, and these will be remedied. These changes are so slight, indeed, that the fences of 1898 and '99 can be used interchangeably in the same super.

As there may be some of our readers who are not acquainted with these new goods, I will explain that the new section is simply a band of wood, without insets or openings. Unlike the ordinary sections having bee-ways or insets, the top and bottom are of equal width with the sides. It is evident that the bee-way must be either in the separator or in the section. If not in the latter, then it must be in the separator. Cleats (to form the bee-ways) anywhere from ¼ to ¾ inch wide, and from ⅛ to 2/12 inch thick, are placed transversely across the separator, and at intervals equal to the width of the section. Tin might be used cleated on both sides, or strips of thin veneering wood in lieu of the tin.

The late B. Taylor, Oliver Foster, and Miles Morton conceived the idea of using slats bee-spaced apart as shown in the accompanying diagrams. It was this form of separator that struck me as being an improvement on any other, for the reason that it afforded a continuous communication back and forth through the sections, and, as I thought, would secure better filling. The results of the past season seem to justify in part the assumption.





As this cleated separator looked very much like a common fence or gate, for the sake of brevity we here at the Home of the Honey-bees called it a "fence," in distinction from separator, which latter is, ordinarily, a plain thin piece of veneering or tin that is let down between the several rows of bee-way sections.

THE FENCE OF 1898.

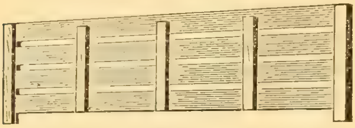


Fig. 1.

The fence that we adopted last season is shown herewith. It was made a good deal after the Morton fence, with these differences: The horizontal slats were narrower, as were also the cross-cleats, or what we may term the "fence-posts," to carry out the simile. It seemed to us that the slats on the Morton fence were wider than necessary. His were 1⅛, and we therefore decided to make ours ⅞, because we had quantities of scrap lumber of that thickness that could be utilized for fences, and thus reduce to a great extent the cost of material. Then it seemed to us also that the posts or cross-cleats were too wide. Our friend Mr. Danzenbaker had been trying cleats ¼ inch wide, and he thought them just right. As here were two men of wide experience who seemed to disagree, we decided to strike a "golden mean," and therefore adopted ½ inch as the width; but, as I shall presently show, there was no golden mean in this case. We should have adopted one or the other extreme.

Let us consider for a moment why the cross-cleat or fence-post should be either wide or narrow, and why the mean of the extremes would not answer. We will suppose, for instance, that we have two supers of plain sections and fences. They are identical, save in one respect—width of cleats. One has cleats ¾ inch wide, and the other ¼ inch. We will suppose that we are looking down squarely on top of them. To assist the imagination a little our artist made a diagram which shows, not two supers side by side, but two rows of sections. One row has a fence on each side of it, with *wide* cleats (B) and the other also has a fence on each side with narrow cleats (b).

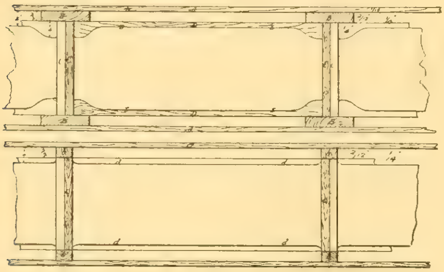


Fig. 2.

The wide white spaces indicate a cross-sectional view of the comb looking down from the top. C C represent the ends or sides of the sections, and B b the cleats. Now, when the *wide* cleats are used, the bees will bend the face of the comb honey under the cleat, making the comb with rounded edges, as shown in the top view. When the cleat is *narrow*, the face of the honey will be slab-like, and run straight across from one side of the section to the other. Still again, if the width of the cleat be a medium or a golden mean between the very wide and narrow one, the bees occasionally build the comb up to the *corner* of the cleat, and then when the fence is removed from the super a bleeding edge is left. For this reason the cleat ought to be either as wide as ¾ or as narrow as $\frac{5}{16}$, the latter being the width we have adopted.

To some, the comb shown as in the top with rounded edges, dipping down under the cleat, will present a prettier appearance. To others, a comb that is flat clear across it, clear to the sides of the sections, is handsomer. I have asked for the opinion of a good many, and the notion of nearly all seems to favor the last named.

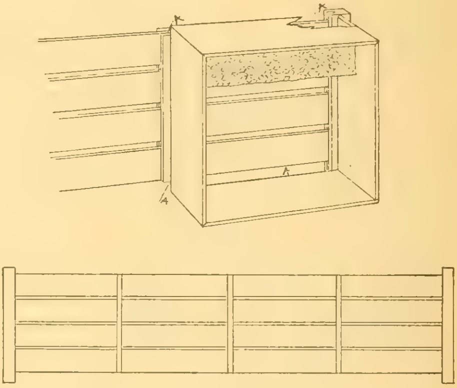


Fig. 3.

For that reason we use the narrow cleat this year, while last year we used a cleat that was neither wide nor narrow; but Mr. Niver and Mr. Morton both claimed that there would be less liability of honey bleeding with a wide cleat than with a narrow one, and this is probably true. But even with the narrow one there is only about one in a hundred that will bleed, and that not enough to make it unsalable.

DIFFERENCES BETWEEN OUR 1898 AND '99 FENCES.

Fig. 1 shows the fence we used last year, and Fig. 3 shows the one we have adopted this season. It is so near like the other that no one would notice the difference unless his attention were called to it. As already stated, cleats are $\frac{5}{16}$ inch wide, instead of ½ inch. As to thickness, they run 13 to 2 inches instead of 12 to 2 inches, as last year; for you will remember that our cleats last year were ⅙ inch thick. There is no particular reason why we should reduce the thickness of cleats except that we thought we should err, if at all, on the safe side. While the reduction is very slight, it is sufficient to give a little more wedging room in the super. The slats, instead of being ⅞ inch wide, are scant ⅞—just enough to permit of the whole fence, when put together, being narrower than the height of the section by ½ inch; or, in other words, the top slat of the '99 fence will drop down ¼ inch, as shown in A in Fig. 3, from the top edge of the section, instead of coming up flush as before, as in Figs. 4 and 1. There was no particular difficulty with the fence of last season; but a few reports seemed to indicate that there were times when the bees would fill the space between the fence-slats and section with propolis.

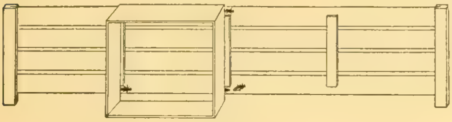


FIG. 4.

This narrowing-up of the fence in Fig. 3 leaves a continuous passageway across the top and bottom edges of the fence — not $\frac{2}{12}$ but $\frac{5}{12}$ wide, nearly. The same object was sought to be accomplished in Fig. 4 of last year by shortening the cleats so that the bees could pass back and forth as shown; but a few reports went to show that the bees would fill up this space over the cleats with bee-glue, perhaps indicating that they did not care to pass a space so cramped as $\frac{2}{12}$ inch.

SPACE BETWEEN THE SLATS — HOW WIDE SHALL IT BE?

Last year we sent out a few of our fences with the spaces less than $\frac{2}{12}$ (the width of the perforated zinc). When the bees could not go through, we learned early in the season that they were inclined to gnaw the space wider; and when *once started* to gnawing they would keep it up till the space would be widened to ⅜ or even ½ inch. This would, of course, result in ridging the face of the comb honey; but before we had sent out many with this narrow spacing we increased the space to $\frac{2}{12}$ inch, and with this spacing we had no unfavorable reports. We shall, as last year, space the slats apart $\frac{2}{12}$ inch; but, unlike last year, the minimum distance will be $\frac{2}{12}$ instead of the maximum. If the distance is more than $\frac{3}{16}$, the honey is liable to be ridged. And this brings me to the question of

RIDGING OF COMB HONEY BEHIND FENCES.

This seems to be confined to individual colonies, even when the space between the slats is only about $\frac{2}{12}$. But at this distance it is very slight. To show you just how perceptible it is, I picked out two samples of sections from Mr. Morton's honey, for I observed that, if one section in the case was ridged, all the sections in that case would show somewhat of the same fault, thus indicating that some bees are more inclined to ridge than others. There is only, I should say, one colony out of a hundred that showed this tendency. Well, out of one of these supers I selected two sections, brought them home, took them to our engravers, and had life-size engravings made from "life" itself. As they are in half-tone, they show exactly how much ridging there is (see Fig. 5). If you look sharp you can see where it is; but unless your attention were called to it particularly you would not notice it. I had the boxes made life-size so the slight defect could be made to show up as plainly as possible.

I will grant that I have seen comb honey ridged very perceptibly, and badly too; but this excessive ridging was caused in every case I investigated by the fact that the slats were spaced too far apart—say ⅜; or that the slats may have been spaced too close, so that the bees began gnawing them, and continued to gnaw them until they were ⅜ or more.

At this point I can not do better than to stop and make an extract from a long letter received from that careful and conservative bee-keeper, J. E. Crane. I produce his letter here, both because it indorses what I have said above, and because it gives at the same time some valuable suggestions.

CONSTRUCTION OF FENCES.

Friend Root:—I can only give you what I think now is right, reserving the right to change my opinion with more experience. I will say I think you are quite right in dropping the separator ¼ inch below the top, or just enough so bees can pass over the top of the separator into the adjoining box and up into the clamp above. I wondered you did not do so last year. I believe, also, you are quite right in thinking that the cleats must be ¾ or ¼ inch wide. I feared that the width you adopted last winter would make trouble, and so in making mine I made them but ⅜ inch wide, and would have made them but ¼ had not my clamps (or supers) varied a little in width; so that, if cleats were but ¼, some of them might not come in contact with the edge of the sections; and so, while the bees have built their combs on to them—i. e., some of them — a little, I do not remember one that "bled" when broken apart from the separator. I laid one or two apart for the purpose of having them photographed, but lost track of them. I presume that, if my cleats had been ½ inch wide, some might have bled.

As to which is the more desirable—¾ or ¼ inch—width for cleat, I do not feel so sure. It might, perhaps, to some extent, be a matter of taste. The ¼-inch width would give a comb almost perfect in form, while the ¾-inch cleat would give, to my eye, a comb not nearly so fine—in fact, a comb that would not grade "Fancy" by the rules of the N. A. B. Association; for you remember the combs, to grade "Fancy," must be of "*even thickness*," and such combs would be only about two-thirds as thick near the sides as in the center away from the wide cleat—thus:

[Mr. Crane here drew a diagram like that shown in Fig. 2.]

I have, as I wrote you, used the past season some 2000 plain sections with fence, and perhaps 1500 old-style sections with projecting edges, with fence also, the fence for these be-

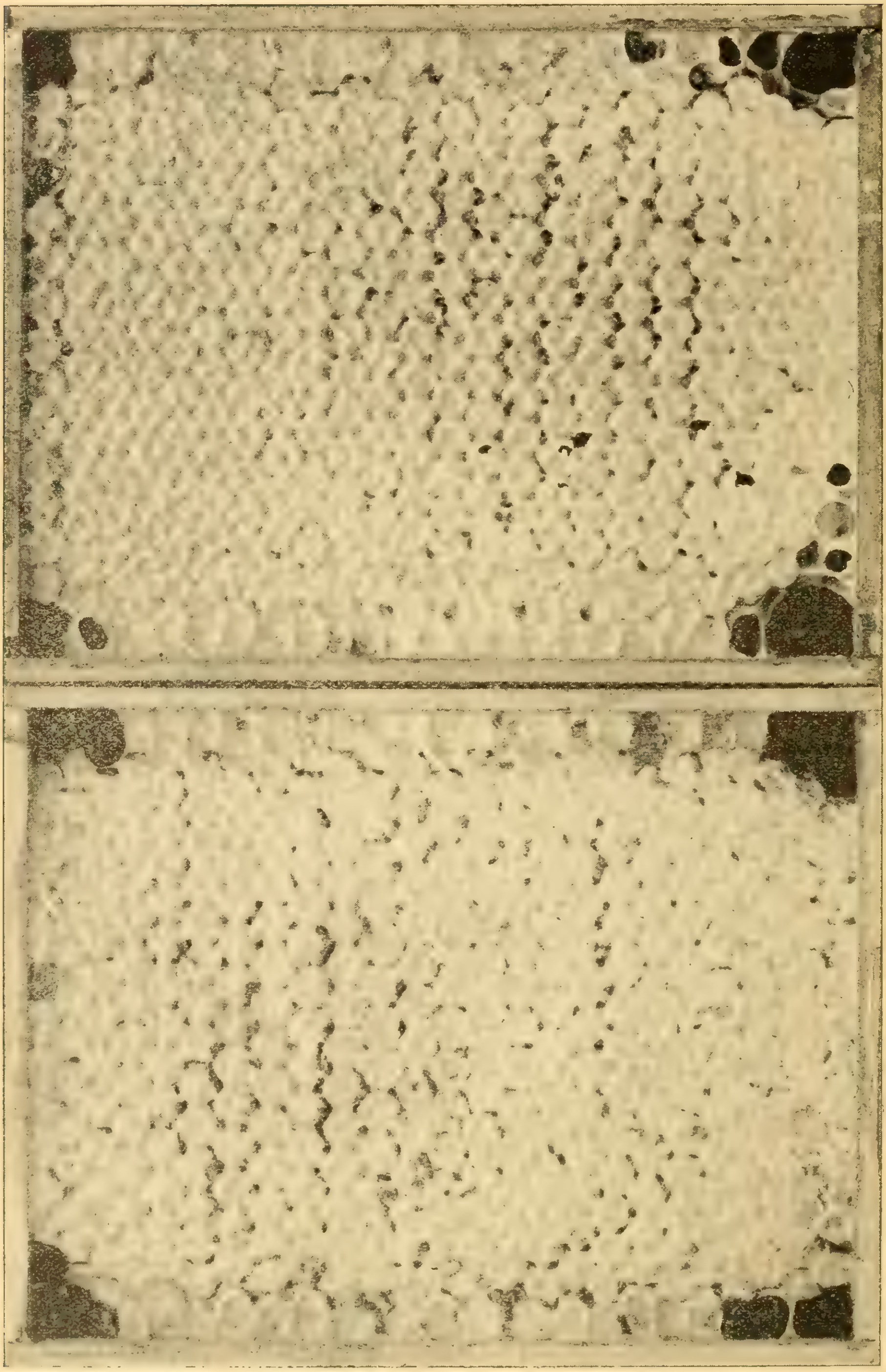


FIG. 5.—SOME OF MORTON'S FANCY HONEY, PRODUCED WITH FENCE WITH WIDE CLEATS (NATURAL SIZE).

ing made with tin cleats as the sample I send you.

The season has been good. For three weeks honey seemed as abundant as I have ever known it. The slats in my fences were, I believe, one-third or more, $\frac{3}{16}$ inch apart—i. e., one-third of my fences were made with slats $\frac{3}{16}$ inch apart so bees could pass through them as readily as if it had been ⅜, and yet not one comb was ridged so as to be objectionable, and I should say that I did not notice more than one in 80 or 100 where the ridge was perceptible; nor did one, that I remember, drip from the combs being built to the cleats. I used, I think, about 400 fences without cleats, with great satisfaction, the slats having projections instead of cleats to keep the sections in place These gave entire satisfaction. The bees evidently enjoy the passageways around the edges of the sections, as they seemed to use them freely.

I send you a sample of three styles of fence used the past season. The fence with tin cleats I used only with old-style sections, where it gives all the advantages of a fence without change in sections. I was not able to determine fully the relative value of each style of fence the past season, nor the value of fences as compared with old-style separators. One thing seemed quite sure, and that is, that the bees would finish off sections near the close of the season more rapidly where a fence was used than where the old-style separator was used.

I believe some one has reported his bees more apt to bulge their combs at the bottom than top. I know they will do it at either point when too much room is given.

Now another matter about which I do not feel so sure. I have often wished, when packing my honey for market, that every box in each case might weigh the same, or vary but an ounce or two. As it is mostly sold by the comb, and not by weight, when the combs vary four or five ounces, and are all sold at the same price, some get their honey very cheap while others pay dear for it, and perhaps they are the very ones least able to do so. Yet if I were to pack my honey in this way it would suit neither the wholesale nor retail dealer, as some cases of 20 sections would weigh but 17 or 18 lbs., while others would weigh 21 or 22 lbs., perhaps, which would not suit. I have given this subject a good deal of thought, with the same result—I could not make bees build combs just as I should like, and could not help having uneven weights. I have never been satisfied, and still have been compelled to put up with it. Yet this year, when putting up my plain sections filled between fences I found thoughts running through my mind like this: "If all my honey would only run as evenly as this lot, it would hardly pay to weigh it at all." Every comb seemed so much like every other comb, a solid brick of nectar, that, after a few cases were weighed, I could tell the weight about as well before it was placed on the scales as after. Was this the result of the use of the fence, or was it because my sections were not as thick as I have been using? Heretofore I have used sections top and bottom 1⅝ with sides 1⅞ inches wide. These plain sections were but 1½ inches wide. I confess I do not feel sure. If the even weights of these combs in plain sections were the result of the use of the fence it is a strong point in favor of its use. If the result of a thinner comb, I should be tempted to make plain sections 4¼x5¼x1¼ thick. Can you tell me if thin sections usually run more evenly, or are more evenly filled than thicker ones? Any information along this line will be gratefully received.

Middlebury, Vt., Oct. 31. J. E. CRANE.

DO FENCES RENDER SELLING SECTIONS BY THE PIECE FEASIBLE?

Shortly after the above was written, the following came to hand:

Mr. Root:—In my letter to you of Oct. 31 I believe my statements were quite correct; but at least one of my conclusions that I drew from them was, I fear, quite erroneous. I stated that I felt sure that bees finished their combs sooner near the close of the honey season when a fence was used than where a solid separator was used, and gave as one reason for this the thinner plain section rather than the open fence, and this might be used as an argument for thinner combs. Indeed, I did not, at the time I wrote, feel at all sure which was the more important factor in the ripening and sealing of the combs—the open fence or thinner combs.

My old-style sections are, top and bottom, 1⅝ inches wide, with sizes 1⅞ wide, and the plain sections were 1½, and look to be not much more than three-fourths as thick; and I thought the combs were at least a full ⅛ less; but, come to think the matter over more carefully, I find that actual space between the fences with plain sections is but $\frac{1}{24}$ of an inch less than that occupied by the bees in the old-style sections, which is quite too small to suppose it would make any marked difference in the time of ripening and sealing a comb of honey. With old-style sections the bee-space is all inside the edge of the section, while with plain sections it is largely on the outside. More than this, my old-style sections were finished where a fence was used, as promptly as where a plain section was in use, so far as I remember. J. E. CRANE.

Middlebury, Vt., Nov. 21.

I take it, then, that it is not thickness of the comb, but the fence, that made the difference.

I do believe that it is more feasible to sell fence honey by the piece than honey produced with solid separator. Messrs. Morton and Niver have sold their honey for years in that way. The honey is graded according to quality and weight. Each shipping-case holds so many sections. I looked over quite a number of their cases, but I could not see that there was any practical difference between one box and another so far as the amount of honey was concerned. Mr. Niver said the scales showed little or no difference. Selling by the piece is very much handier; and *if* the fences will enable us to get our sections of an almost uniform weight, selling by the piece will be feasible.

FENCES OF VARIOUS CONSTRUCTION.

When the subject of fences came up a year ago, inventive genius went to work immediately to devise fences of other construction. Some of them were good, some indifferent, and some of them decidedly bad. I will not attempt to show all the different styles, but only some of the best.

The first one is a fence made by J. E. Crane, and, I believe, patented by him. Instead of having cross-cleats, pegs ½ inch wide and ⅛ inch thick pierce each slat at just the right intervals to come opposite the uprights in the sections. We illustrated this fence some little time ago, but for convenience we reproduce it.

The object of these pegs is to afford not only communication from section to section *crosswise* of the super, but from section to section *lengthwise* of it. The pegs stick out just $\frac{2}{12}$ inch beyond each slat, and it is probable that the bees would not fill the spaces between the pegs with propolis as they do the spaces over the top and under the bottom of the cleats of the fence shown in Fig. 4.

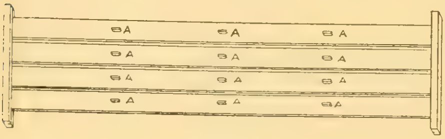


FIG. 6.

I think Mr. Crane wrote me that he was well pleased with the results secured by this fence. The only objection to it is that it is not as strong as those which are bound by transverse cleats shown in the other figures.

THE WOODEN-BUTTON FENCE.

Shortly after this, some inventive genius, simultaneously with ourselves, got up a fence like those shown in Fig. 7 below. The principle is much like that of Mr. Crane's; but the spacers, instead of piercing the slats, are held securely between them. The spacers themselves are little square blocks $\frac{5}{12}$ inch thick, with a groove on each side about ⅛ inch deep, and $\frac{1}{12}$ wide. These are slipped in between the slats while the fence is being put together, and are held in position by means of glue.

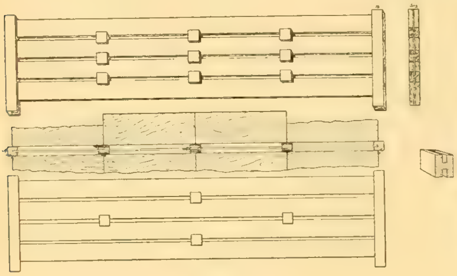


FIG. 7.

THE HYDE-SCHOLL SEPARATOR.

This is a form of fence or separator that embodies the principle of both the fence and the old-style separator; and, except in the point of its construction, it would make an excellent separator. Well, here is what Mr. Hyde has to say about it:

THE HYDE-SCHOLL SLOTTED SEPARATORS AND SURPLUS ARRANGEMENTS.

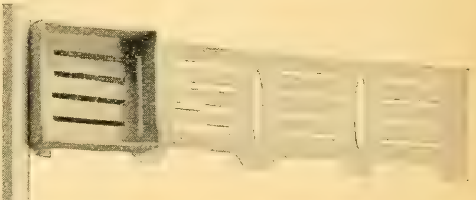
[I will explain that Mr. Hyde sent us samples of his separator. They were made out of the ordinary thin sawed separator stuff that we use on old-style sections for '97 supers, with this difference, that the style shown in Fig. 8 was slotted out with transverse and longitudinal openings as illustrated. The style shown in Fig. 9 is the same thing, but cleated in the manner shown.

Mr. Hyde asked for suggestions and criticisms, and I replied, stating that the most serious objection in my mind was the frailty of a separator of this kind, and that removing the same when stuck up with bee-glue, from a super filled with honey, would be liable to break a good many, as there was nothing but the strength of the grain to hold them together. Mr. Hyde's article, describing this separator and replying to my criticisms, is as follows:]

We have two separators on the free-communication principle — one for the old-style supers and one for the plain section. They are designated Nos. 1 and 2. I will describe No. 1 first.

We start with an ordinary plain separator, such as was furnished with the Dovetailed hive before 1898. This separator is then slotted out, making sixteen openings of four divisions, as shown on the left of the cut. Each of these slots is $\frac{3}{16}$ x 2½. Just between each division is an upright slot ½ x 3. These slots come opposite the upright edges of the sections.

FIG. 8.



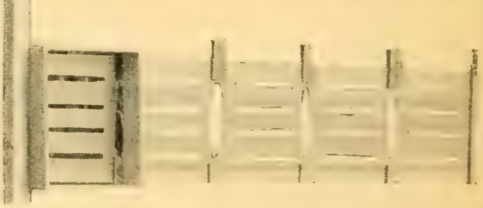


FIG. 9.

Thus made they are used in connection with open-all-around (or open-four-sides) sections, affording free communication in every direction; viz., from row to row, from section to section in each row, and diagonally opposite, as can be readily seen from an examination of the separator and section shown on the left of the cut. The consequence of all this is we shall get more honey and more money by reason of the free communication offered throughout the super.

In using this style of separator, all we have to buy is the separators, since sections would have to be bought anyway; or, if one prefers, he can first use the old ones and gradually introduce the open-all-arounds.

Such an arrangement is, in our estimation and that of others, greatly superior to the fence separator, because it is not only cheaper but offers freer communication than the fence, namely, from section to section in each row, and diagonally opposite.

I almost neglected to state, however, that the separator should be so made that it will come ¼ inch below the tops of sections in order to give a bee-space over the edge of the separator.

Now for No. 9. It is made exactly like No. 8, but adapted to the plain section. The super and separator shown are for the Ideal size of super. This is done by gluing on the separators little pieces as shown in the cut on the right. The little pieces on the top edge of the separator are 4/12 thick, plus thickness of separator stuff, or 2/12 on each side of the separator. They are one inch long, and are saw-kerfed back ¾ inch, slipping over the edge of the separator. This leaves a ¼-inch bee-space over the edge of the separator; in other words, the whole of the separator except the cleats is ¼ inch lower than the top of the sections. The bottom pieces are 1½ inches long, and saw-kerfed and slipped on ¾ inch. The reason they are ¾ inch longer than the top ones is that the pattern slats are ⅜ inch thick, which will still leave us ⅜ inch space under the edge of the separator. The end cleats are the same as used in the fence separator (of course, this can be applied to the 4¼ sections as well). With this arrangement you will get the benefit of the plain section and the Hyde-Scholl separator.

As to your objections: First, as to frailty, I grant they will not be quite as strong as the fence; but by making them of a little heavier material than common separator stuff, especially in the case of No. 9, where the two end cleats and little pieces are glued on, this objection is reduced to a minimum. Second, as to their splitting in pulling apart by reason of propolis, I will say they will not be as bad as the fence separators, because only the corners of the sections will come in contact with separators, and at the corners both separator and section are strongest, hence they will not be so bad to pull apart as the fence where the section comes in contact with the separator ⅞ of the way. Another reason for my preference for this separator is that there will be fewer corner holes than with either the fence or old separators; also, sections will be better filled out to the edges; for where there is a cleat on the fence, on the contrary, there is a passageway with the Hyde-Scholl separators.

Hutto, Tex. H. H. HYDE.

[The transverse slots in Fig. 8, as I have stated above, cut the very life and strength out of the separator, even if it were made thicker as Mr. H. suggests. Fig. 9 is not so bad, because it is secured by cleats at the ends; but I should be afraid that neither would stand shipping, and that a large percentage would break when taken out of the super, owing to bee-glue. If they were of metal they would be strong enough; and even making them of thicker wood, as suggested in the article, will not help matters much.

As to cost, our own estimates show that the jobbing price would be higher than the jobbing price of the fence. The Hyde separator will have to be made of good solid sound stock, and of pieces not less than 4¼ inches wide. The fences, on the other hand, are made of scrap material — such stuff as would ordinarily go into the furnace. Practically, the only cost of the fence is the labor of putting it together.

Aside from frailty and expense of the Hyde-Scholl separator, I have no doubt it will give results equal to any fence, and Fig. 9 might produce fuller and better-looking boxes of honey, for the principles are good.

Perhaps I should remark that Fig. 9 embodies the principle of a separator used by L. A. Aspinwall, of Michigan, and described in the *Review*, page 318, for December, 1897. If I am not mistaken, this principle has been made the subject of a patent.

I am sorry not to be able to speak more favorably of the Hyde separator; but I was asked by friend H. to criticise, and I have done so, hoping that our friends will avoid expensive experiment—not that they will get into any trouble with Mr. Aspinwall, for I am sure there will be no need of any litigation, but because, mechanically, the separators are weak, and from the cost point of view they are more expensive than fences.

What I have given thus far has been rather in favor of the plain section and fence. The following article, from F. L. Thompson, has been received; and as he takes up the other side I present it here.—ED.]

NEW AND OLD STYLE SECTIONS IN THE SAME SUPER.

	Average number of pop-holes in finished plain sect'ns between fences.	Average number of pop-holes in finished scalloped sections.	Per cent of excess.
1st super	3 1/8	(With plain 3 7/9	21
2d "	2	separators.) 2 8/13	31
3d "	2 1/9	" 2 2/3	26
4th "	3 1/12	" 4 1/16	32
5th "	2 3/11	(No separat's) 4 1/12	36
Total av.,	(about) 2½	(about) 3½	

The above table speaks for itself. Each super had three or four rows of one kind of sections; and the remainder, four or three rows of the other. Narrow starters, top and bottom, were used.

But, don't crow. The superiority of fences, so far as that table is concerned, is about all on paper. There was no apparent difference in the size of the pop-poles, and the difference in number was not visible to the eye. I thought from their appearance they were alike in that respect, until I found a mathematical difference by counting and averaging. Grocers and consumers judge only by appearance. The table is concerned with a comparatively unimportant matter. In glancing at a comb, filling at the edges counts for much more than pop-holes, within ordinary limits. The plain sections showed no superiority to the eye except in one super (the third), and then but faintly apparent, in the matter of filling at the edges of the comb, over the scalloped sections in the *same supers*. (The filling by supers varied from poor to good.) This point surely constitutes about 90 per cent of what we term "good filling," when, as in this case, all the pop-holes were medium or small in size in both kinds ; and not one of those who have of late been booming the new sections in GLEANINGS, so far as I have noticed, touches on this all-important point at all. Instead, they give us glittering generalities — "plain sections a success," etc. (meaning combs produced with the aid of fences). Why, what else did those wonderful photographs chiefly lead us to expect than combs well filled at the *edges?* The "success" of the fences should be spelled this way, see— f, a, i, l, u, r, e.

I found that the plain sections between fences were easily scraped, though not any easier than inset sections which had no separators at all; took less room in the case, didn't gouge each other, had straight combs, needed no separators in the case, looked neat, etc. But these are minor points. Because the combs were not built crosswise, I suppose, therefore they are a "success." I think "success" means that they should be a great deal better than the old style ; and for large producers, who ship, that means first, last, and all the time, combs well filled at the *edges* under all conditions, in strong or weak colonies, poor or good averages, long or short flows ; and, especially, well filled when old-style sections in the *same super* would be poorly filled. Now, who has tried both kinds in the same super? I haven't heard of any one yet. What kind of experimenting do you call that? It is really amusing to see all those so-called testimonials smirking at one another across the page. It reminds one of those well-bred social gatherings in which a vast amount of smiling is going on, without any visible cause of mirth — the kind that makes one's face tired. Do let's have a sufficient reason for all the blandness.

It was said that plain sections would save money in cases. Because one can get more of them in the same sized case? What's the matter with having a larger case, if one wants to save money that way? The small additional expense of larger cases is offset by the cost of fences. But that argument is weak, anyhow, because one's market may be accustomed to a certain number of sections in the case; and we certainly want the same number as now if we sell by the case, as will have to be done if light-weight sections are to be more profitable.

The new sections, not being better filled out without attention in other ways which can be as well given to old-style sections, will scarcely bring a higher price. (They wouldn't anyhow in this market.) My second-crop inset sections between plain separators this year were as well filled out as the first-crop sections (which means very well indeed), though last year they were much inferior in that respect, and though the flow was light this year. In fact, last year my first-crop sections were an exact copy of the lower row in the photograph on page 128, and were quite heavy; and the second-crop sections were an exact copy of the upper row. This year, in the majority of colonies, both crops copied the lower row in the photograph, even though they were old-style sections with plain separators. It wasn't race of bees that made the difference. The same bees (Italians) gathered both crops. I suppose it was because I doubled up the brood this year in June, while ordinarily, in this locality, the colonies dwindle down to little better than nuclei during the second crop. If that supposition is correct, I infer that *strong colonies* have many times the influence of fences in securing well-filled sections. Let's get up a boom for strong colonies.

Again, I have never tried taking pains to get the foundation close to the wood all around ; but Mr. Getaz has ; and he says in the *Review* he can reproduce at will by that means such combs as appear in plain sections in the photograph. And Mr. Danzenbaker, as reported by Mr. Weed, lays *his* success in securing well-filled sections to the same plan. Doesn't that give the fence away? If it secured good filling, what would be the use of being so particular about the foundation? If the foundation does it, what is the use of the fence? Is not by far the greatest service which the fence renders, that which consists in bringing the comb surface up close to a straight-edge laid across the section? From one point of view we might call that "good filling ;" but, if so, then we need a specific term for that filling at the edges which makes square slabs instead of rounded chunks. With that kind of filling, which chiefly affects the appearance of the combs, the fence, in my experience, has next to nothing to do ; but that virtue is just what was claimed for it by the photographs. The photographs didn't lie; but they didn't show ordinary sections from the same super.

I did not try any spaced 1½-inch plain sections without separators, but did try a few 1⅝ sections that way, made by planing down ordinary ones. These also were tried in the same super with plain sections and fences. In this super both kinds were exceedingly well filled at the edges and corners, and no difference was observable between them in that respect, or in the size of pop-holes. The plain sections averaged $3\frac{1}{12}$ holes, the others 3⅝. But, as usual, both presented an equally good appearance to the eye, aside from the bulging.

I also tried three other supers of these reduced sections, spaced apart ¼ inch, with the result of many brace-combs between the edges of the wood of opposite sections. The spacing should have been no more than just enough to let a bee through, and the sections should have been supplied with full sheets. As it was, most of them bulged badly, requiring cleated separators in the case. But this lot of sections averaged nearly 17 ounces, being the heaviest of all. The total average section weight (two apiaries) was 14⅔ ounces. The average of the plain sections was not quite 13 ounces.

A neighbor, who used 7-to-the-foot sections without separators nearly altogether, producing 300 cases, averaged $14\frac{5}{7}$ ounces to the section, with very few bulged. That scheme looks more promising to me than plain sections and fences. The 7-to-the-foot section is *really* a narrow section ; and whatever influence that degree of narrowness has in securing straight combs, we may get from it (without lowering our present average weight) by discarding separators ; and by discarding separators we get combs almost as close to the straight-edge, laid across, as those produced with fences. And if we do want sections as light as the plain ones, we can make inset sections still narrower, say 1½ inches, and be still more likely to get straight combs. I think the editor missed the point in quoting Mr. Hutchinson's editorial on narrow sections, for the 1½-inch *plain* section with cleated fences is little more to be compared with really narrow sections than is the 1⅞-inch section with plain separator. With the cleats, it is $1\frac{5}{6}$ inches in width, making only $\frac{1}{24}$ inch difference. It is the fence separator, only that makes straightness in its case. Well, if we can get straight combs by using narrow sections, which will be no lighter than plain sections have proved to be, and get them well filled by attending to the foundation and the strength of colony, and get more sections in a case, why, then narrow inset sections without separators are clearly superior in promise to plain sections and fences, because we don't know but we may get just about the same results, with the relief from the work, bother and expense of separators thrown in. I think I should even experiment with *open-sided* narrow sections, if necessary, before dropping the notion.

So far we have had no experimenting lately published that has been worthy of the name. Both kinds of sections compared should *always* be in the same super.

Spaced plain sections without fences may give good results in filling, but the adjustment is an unsolved problem. Mine varied too much, in spite of all I could do ; and I fancy that, unless the distance from *center to center* is 1½ inches or less, they will bulge. That means pretty narrow sections.

Gluing of fences is a failure. I shall have to go all over my fences with nails. About one-third dropped off one to five cleats.

Montrose, Col. F. L. THOMPSON.

[In the *American Bee Journal*, last April, page 225, there appeared an article from Mr. Thompson, condemning plain sections and fences, and it is but natural that the writer's prejudice (unconscious no doubt) should now be rather *against* than *for* them. He omits to give us one very important point; namely, the exact construction of the fences he used.

Mr. T. says there was no experimenting worth the name, and that both kinds of sections compared should be in the same super. That is exactly the way Mr. Crane conducted his experiments, he tells me, and yet the results are as he states in this issue.

As to Mr. Weed's statement that Danzenbaker was particular to have his foundation come clear out to the wood, that was a mistake for which I am partly responsible. Mr. Danzenbaker explained at the Omaha convention that he did not want foundation to come clear out to the wood, and that he was no advocate of such practice; $\frac{1}{16}$ inch was as close as he cared to go. Thus falls one of Mr. Thompson's main props.

Mr. Thompson says, again, "It is really amusing to see all of those so-called testimonials smirking at one another across the page." This is almost as unkind as it is unwarranted.

As to glue being a failure, it was only such with Mr. Thompson, I take it. There is a great difference in glue, and even with good glue it takes experience to get good results.

PLAIN SECTIONS CONDEMNED IN THE CANADIAN BEE JOURNAL.

A short time ago the editor of thta journal asked for the loan of certain engravings from our catalog. The favor was freely granted ; but we were a little taken back when, in his issue for December, those same cuts were used as a boomerang on the goods they represented. We did not quite think the courtesy would be reciprocated in that way. However, it is all right. Intelligent, honest criticism, which I believe Mr. H. intended to give, we are glad to meet, no matter how or when it comes.

In a general way Mr. Holtermann sees no advantage in plain sections ; in fact, came out against them a year ago. He thinks the fences will be more difficult to clean, "because," he says, "surely the fence separator with three spaces between the wood or bars, and five upright posts, can not be scraped more readily than a thin plain board. . . Bees are more apt to propolize in the angles and corners of the fence." This is all true enough ; but Mr. Holtermann overlooks the fact that only the upright cleats, or that part that actually comes in contact with the sections, needs to be scraped. Actual experience (and I have seen cleated separators eight or nine years old) goes to show that cleaning more is time wasted.

He thinks it reasonable that the open separator would be an advantage; but in the tests he made, he says the advantages were not as apparent as he thought they would be. This may be all very true; but, as I have elsewhere pointed out, the experience of one bee-keeper one season proves nothing very much either way. It is the experience covering a series of years, and from different bee-keepers, that should really decide the matter. I have had only one season's test, and that was very favorable ; but I have never mentioned it before. I rely, for my information, on the experience of others, covering years.

In another place Mr. Holtermann seems to gather the impression that I said that the bees will enter supers of plain sections as readily as they will those of the extracting kind, and then proceeds to overthrow the statement. If Mr. H. will read the passage carefully he will see that he read more into it than the language warrants. Perhaps I implied that supers of plain sections and fences would be entered more readily than supers of the old style. If so, there are not wanting reports to verify the statement.

He doesn't believe plain sections will bring a higher price, because none of the honey that was in such sections secured any prizes at the Toronto, London, and Ottawa exhibitions. In some markets they would not bring any more money; but in others they do. Mr. Byron Walker, a man who has had, perhaps, as extensive an experience in marketing honey as any other man in the United States, says honey in plain sections usually grades one notch higher than honey in the old style. The Columbus Commission and Storage Co., without knowing any thing about them or the discussion that has been going on about them, desired to secure several thousand pounds of the same sort as that in the crate marked "plain sections." As to their not getting prizes, we recently received word from William Boxwell, of England, who wrote us (referring to the exhibition in Glasgow, in August) that "all the prizes for sections of honey were won by the no-beeways."

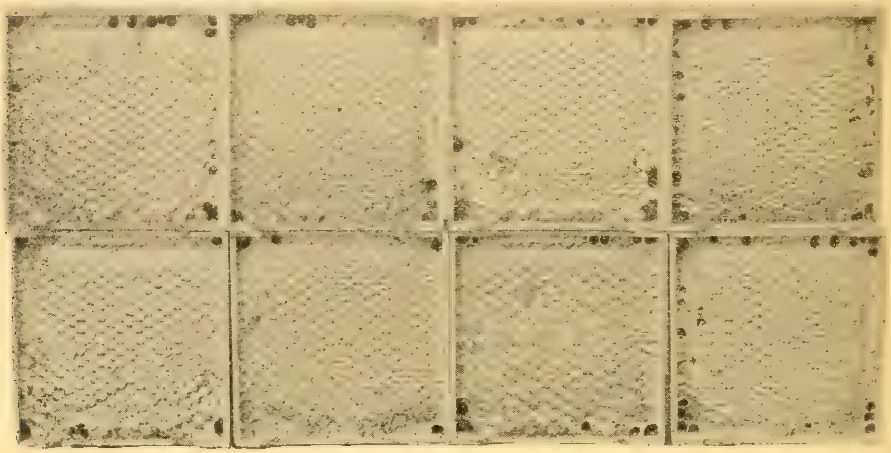


FIG. 10.—HONEY IN OLD-STYLE SECTIONS.

Referring to the matter as to the facility in scraping plain sections, with their plain straight edges, this he considers their weakest point. How he can so consider it I do not see, because there are no irregular surfaces for the knife to dip down into.

THE AMERICAN BEE-KEEPER ON PLAIN SECTIONS.

The editor of that journal, in his December issue, has a very fair article on plain sections.

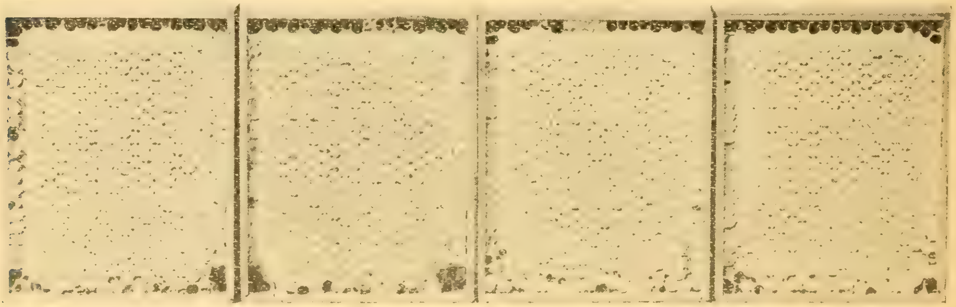


FIG. 11.—SOME OF DANZENBAKER'S 1898 FENCE HONEY.

He is neither very strongly for nor much against them. His position is summed up in the following:

> We have, as yet, had no opportunity of testing the advantages claimed by many for the plain section, though we have seen enough of the product upon the market to justify the conclusion that all plain sections are not as well filled as those which have come before the attention of the Review; and yet, no prettier

goods have been seen this year by us than have been shown in plain sections.

Just before closing this very long symposium I want to give some pictures of comb honey produced in old-style sections. The honey will compare very favorably with any I have ever seen in plain sections; but I had to hunt long and hard for it, and finally secured some very pretty specimens, and these are shown in Fig. 10.

In conclusion let me say that plain sections and fences must stand on their merits. If they won't hold their own, let them die. As manufacturers we can make as good a margin off the old style of goods as the new, but we believe the new are bound to live, like all good things that have their enemies.

* * *

AGE OF QUEEN-CELL LARVÆ.

Naturally Reared Queens vs. Artificially Reared Queens; How to Distinguish Swarming from Supersedure Cells; an Interesting Discussion.

BY R. C. AIKIN.

Beginning on page 724 Dr. Miller has an article on queen-rearing, discussing the point as to whether a colony, suddenly made queenless, and left to itself, would select such larvæ as would make the best queens. I am not going to pretend to answer the question in positive terms, for I am not sure of the answer myself. I think, however, I can help to an understanding of some of the points under discussion.

As most bee-journal readers are aware, I have for a number of years practiced unqueening to prevent swarming, and to keep the colony very strong for honey-gathering — especially section-honey work. Beginning with the season of 1890, I have unqueened more or less every year. I should judge that I have practiced unqueening on not less than 1000 colonies in the nine years. The colonies were suddenly deprived of their queens, without regard to whether they were preparing to swarm or not; for the bees were in out-yards, and a certain yard must be worked certain dates, and made safe from swarming for a certain period while I was at other yards.

I always calculated to remove any cells that might have been started, at the time the queen was removed. I always counted that there positively would be no swarming for ten days *after* the day of unqueening. I also counted that, by the end of the eighth day after, all worker brood would be sealed, so that, if I worked the yard the ninth day after unqueening, there was no open or unsealed brood in any hive.

With the great amount of work to be accomplished in putting on extras, etc., it frequently happened that the tenth and eleventh days came around before the work of cutting out cells was accomplished. I have even allowed them to run till the twelfth and thirteenth days. I had accepted the commonly taught theory that bees thus suddenly made queenless would use larvæ as much as three days old, or six days from the laying of the egg, making the selection, probably, within ten or twelve hours after the queen was removed. Reasoning thus, the first queen should emerge the tenth day if she fully-matured in sixteen days. Actual experience, however, began to teach me that a *very* small per cent would have a queen emerge the tenth day (I always count exclusive—that is, the ninth, tenth, etc., *after* the day of unqueening), and even a very small per cent the eleventh day. I was also surprised to find a considerable per cent would not have a queen out of the cell till the thirteenth or fourteenth days.

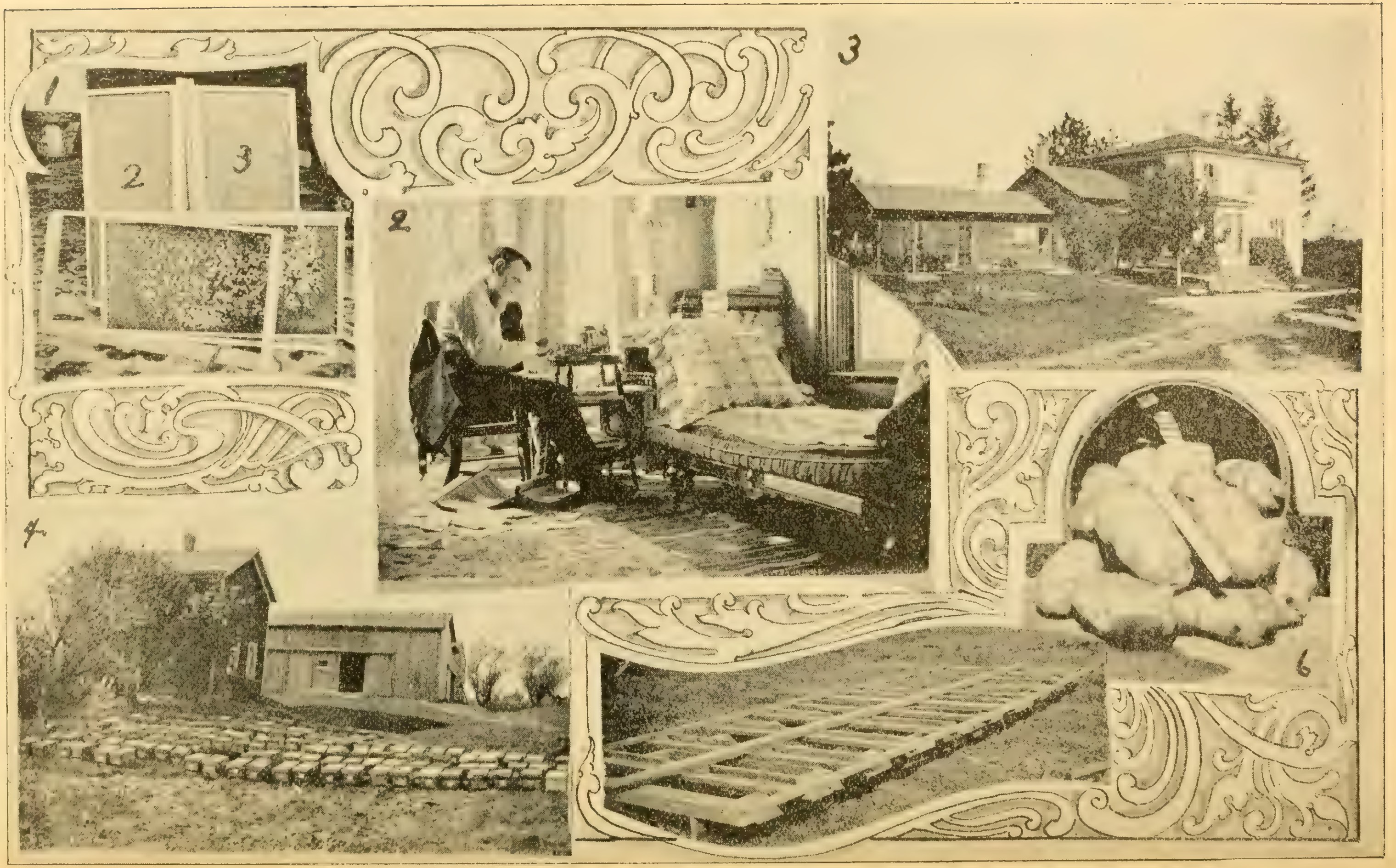
I believe, but do not know, that, when a colony has already started cells before the queen was removed, such a colony will mature a queen a little sooner than the one that had no notion of swarming. This would be reasonable from the facts that there might be queen-cups with eggs in, and overlooked in cutting out cells (I do not try to find all such), and that the cell-building spirit was on them, and no time would be lost in waiting to find that they were queenless.

My experience is that the greater part of the swarming resulting from my unqueening would occur from the twelfth to the fourteenth days, more coming on the fifteenth than on the eleventh. Colonies worked the eleventh day would show, a good many times, a few excited bees about the most mature cells, and the inmate beginning to exercise herself and gather strength. I have cut out cells from a great number—probably several hundred—the tenth to twelfth days, and *very* few were found emerging as early as the tenth day, and but a small per cent the eleventh day. I should say that probably half the colonies would have a queen emerge from the cell by the end of the twelfth day, and taper from that to the fifteenth day.

My opinion is that fifteen days for maturing a queen is a little bit short — I still count sixteen. I should say that, since the majority of colonies mature their first queens the twelfth and thirteenth days, they started with them not over four days from the laying of the egg. Then remembering that some few had probably started (or selected) the egg to be used, before unqueening, and still another per cent would not mature a queen before the fourteenth to fifteenth days, and it would seem that by far the larger per cent were reared from selections made inside of five days from the laying of the egg.

This is not proof, however, that such queens are the equal of those reared regularly under the swarming impulse or by supersedure. There is a great difference between cells built for swarming or for supersedure, as compared with those built when a queen *suddenly* disappears. If I remember correctly, Dr. Miller has said, in substance, that he would like to see the man or woman who could tell whether cells were built for supersedure or for swarming. I do not profess to be able to tell certainly, yet I generally feel pretty confident that I can, and I should not miss the truth very far should I assert that I can tell cells built when the queen is suddenly removed as compared with swarming or supersedure cells.

Many swarms issue on supersedure cells—a



SNAPSHOTS AT THE HOME OF DR. C. C. MILLER.—SEE EDITORIALS.

fact overlooked by very many apiarists. Quite a considerable per cent of the swarming that comes out of the regular season — early and late — is of this class, as well as some that comes right in the height of the swarming season, and will be far more noticeable in apiaries where the replacing of aged or feeble queens is left to the bees themselves. Let none but the most vigorous queens reach three years—the majority be removed by the end of two full years, and superseding will be reduced to a minimum.

Now as to how to tell the various kinds of cells. Supersedure and swarming cells are very much alike — so much so that individual cells of either can not, as a rule, be distinguished one from the other. Collectively, however, they can usually be discerned. In either case they are built large and roomy—thick, corrugated, or rough walls, and almost invariably on the edge of a comb or in some place where the cell can hang perpendicularly and have plenty of room. If built for supersedure, usually only from one to three are constructed. Sometimes there will be four, five, or six, though not often so many. For swarming, the rule is not less than five or six, and up to twenty or thirty — usually from six to twelve.

If from any cause the queen is abruptly removed when no swarming or supersedure work has been begun, cells will be built in all sorts of places and shapes. You may expect to find them right on the face of a solid sheet of brood, often two to four in a cluster, and so joined to each other that they can not be separated without mutilation. The wall will be thin, the cell short, and many times no residue of feed is left when the queen matures. The number constructed will range from ten to fifty, usually twelve to twenty-five in strong colonies. Sometimes the cells will be quite large and thick-walled, and few in number, though in the great majority of cases more or less of them will be found on the face of a comb and at an angle, while swarming or supersedure cells are almost invariably on some edge, and plumb, or very nearly so.

These are my observations and conclusions after many years of handling cells under the various conditions and by the many thousands.

I think that many of the forced queens are as good as any, and that many are not. Almost any swarming or supersedure cell will bring a good queen, but many of the forced ones are of a very poor order. Many and many a time have I destroyed *every* cell built by unqueened colonies, not because the colony did not seem good enough, but because of the scrawny, stubby little cells. In such cases, if no swarming or supersedure cells are to be had I select from those colonies that have large and well-built cells. To unqueen and not use any judgment in the selection of cells would degenerate the stock by getting short-lived and weak queens, in my opinion. I feel confident that the average cell under forced circumstances is not equal to the average of either swarming or supersedure ones.

When a colony is building cells for swarming or superseding, they first make a queen-cup, cell-stump, or base; glaze or varnish the bottom (in reality it is the roof, for they open downward, and have no bottom), and then deposit the egg in the cell. I do not know whether the queen or the workers put the egg there, but I do know that it is put there, and the cell developed as the egg hatches and larva grows. The whole process is of a regular and methodical order, the larva usually well fed and cared for.

Forced cell-building is much as when one has been burned out of house and home. When fire, flood, or wind has destroyed our home we put up a "temporary shack" for present accommodation. Suddenly deprive a colony of its queen when no cell-building was *anticipated*, and a very large per cent of the cells constructed will be of the temporary kind—thin-walled, small, built at almost any angle between the horizontal and perpendicular, larvæ more sparingly fed—a general irregular and conglomerate lot. Occasionally a colony will be more methodical and regular; but I suspect that this is mainly caused by such colonies being ready for or having anticipated the work, and had cell-cups already started, and may be eggs or small larvæ in the cups in a suitable place for development.

I do believe that, by using cell-cups, and proper conditions being present, very good queens can be reared under our manipulation, but not by haphazard methods.

Loveland, Col.

[Although you do not say so in just so many words, I gather from what you have written above that your experience is right in line with that of myself and perhaps of R. L. Taylor; namely, that queens reared otherwise than under the swarming impulse and that of supersedure are inferior. I think I have spent something like seven or eight of my summer vacations from school rearing queens; and if there is any one thing about which I feel pretty sure, it is that queens reared from cells built in a colony that is suddenly made queenless are not the equal of swarming or supersedure queens, in prolificness, size, or longevity. One can give the bees a sort of swarming fever by continuous feeding; and under this stimulus cells are built that are nearly if not quite the equal of those built under the *natural*-swarming impulse. But the plan we like best of all is what I may call the supersedure method, or what is really the Doolittle plan. Whenever we find a colony that is trying to supersede its queen, we mark it and reserve it for future use, for they are just the colonies that, under the stimulus of feeding, will build those beautiful long peanut-shaped queen-cells; and, my! such queens!

If the doctor will try the plan I am sure he will be converted to our way of thinking, if he is not already. He surely will be if he will try the methods side by side. When we first tried the Doolittle plan ourselves we decided there was nothing in it; but later on, when we went into it more thoroughly and carefully, we saw there was a good deal in it. I am thinking it will be quite a catch-line for a breeder to advertise, "Queens reared by the Doolittle plan."—Ed.]

RAMBLE 157.

At Work in the Apiary; Experience with Harbison Hives.

BY RAMBLER.

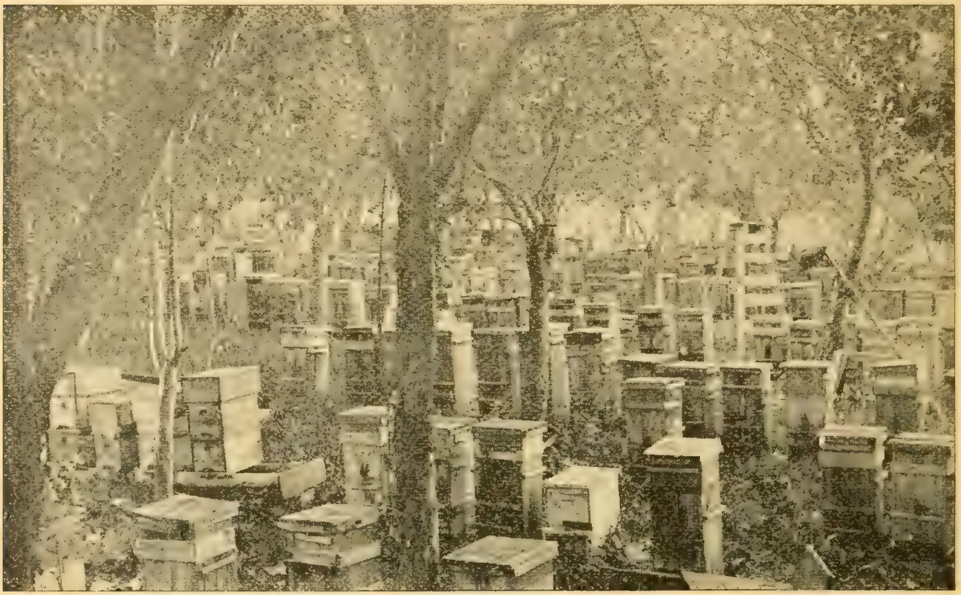
On my arrival in Oro Fino a very agreeable episode occurred. I found temporary quarters with the nearest neighbor to our apiary. As I sat down before the ample fireplace in the evening, to enjoy its benign influence, a fleshy, square-built man sat in the corner, and, addressing me by my normal name, he said, "You are the fellow who used to keep bees back in York State. I have been by your old place a great many times. Do you remember me?"

Not having had a speaking acquaintance with him in the old times, and not having the pleasure of the sight or thought of him for many years, I could not recall his name; but when he said "Temple," memory forged the missing link, and I remembered the man I had often seen. We had many pleasant reminiscences of our respective Eastern homes, and I reflected that here, where I supposed I had gotten to a place where it would be hard for a friend to find me, nearly the first one I met had known of me in the far East.

The apiary that had fallen into Mr. Levering's hands through the death of his brother, and into my hands through Mr. Levering when it changed brothers' hands, contained 265 colonies of bees. When I arrived on the scene of action a few had died through the winter, and there were 234. I herewith present a photo of the outfit with which I struggled for several months; and before recounting my own experiences I am sure it will interest the reader to know something about the original owner and his methods of management.

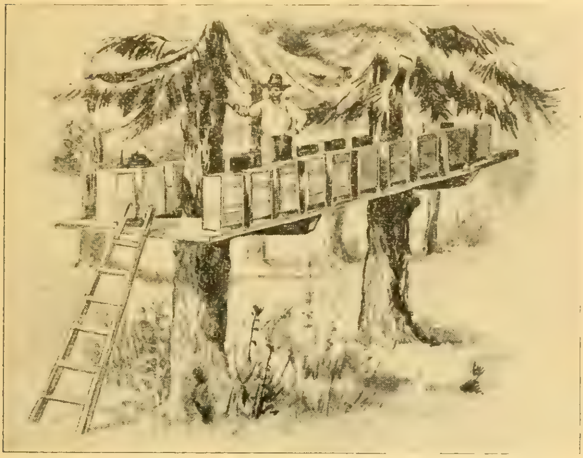
Mr. Newton Levering came to this valley in the early days, and followed mining for several years. He became interested in bees through the number of bee-trees that were on the mountains, and his first start was from bees taken from trees. He early adopted the Harbison hive, and, as will be seen in the photo, the bees are nearly all in that style of hive.

Mr. L. practiced migratory bee-keeping. In the early spring, or about the time fruit-trees were in bloom, the bees were moved from the home yard and placed in various places in the valley and in some of the canyons. In these out-apiaries the hives were placed upon platforms about eight feet in height. The platforms were built to trees, and were so constructed as to prevent bears from destroying the colonies. A bear is very persistent in his search for honey, and, owing to defective platforms, he lost at one time about $800 dollars' worth of bees and honey. A bear with her cubs would approach a platform, and, while the cubs waited below, the old bear would get upon the platform and knock the hives off. They would all fall to and have a feast. Mr. L. at length made the platform tight around the trees, and boasted that he had gotten them bear-proof, squirrel-proof, and mouse-proof. It was no easy job to move and lift these awkward hives to and from these platforms. A platform would accommodate about 20 hives, and some of them were only two miles from the home apiary.



RAMBLER'S APIARY AT ORO FINO, CAL.

In the earlier days of his bee-keeping Mr. L. secured the honey in the old-fashioned 12 or 14 pound box, and sold it in the mines for 30 cents per pound. For several years he obtained more than 20 cents per pound for his honey; but times changed, and it gradually lowered in price until he sold for 8 and 10 cents. Much of the honey was put up in round tin cans with a loose cover. Comb honey was fitted into these, and liquid honey poured in. The people around Oro Fino, without exception, give Mr. L. a very generous name, and he kept open house and an open hand to all in need.

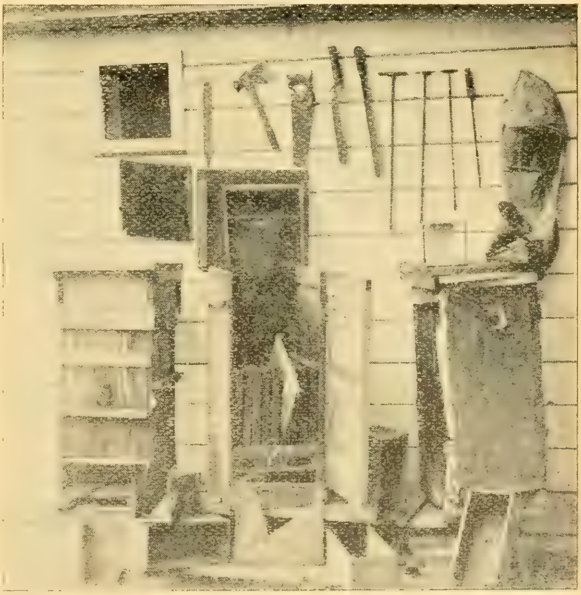


A BEAR PROOF APIARY IN CALIFORNIA.

As will be observed, the home apiary was comfortably located beneath the shade of apple and peach trees. The tall hives were placed close together. This was sometimes a vexatious feature in my management; for, should any of our various tools be dropped in front, a walk clear around the end of the row was necessary in order to recover it. These hives had been in use quite a number of years, and, like all Harbison hives I ever saw, the back portion was warped all out of shape, and much stuffing of rags and paper was necessary to keep robber bees from prying around the cracks. As to how these hives were moved to and from the platforms twice a year, without an enormous leakage of bees, is too much for me to imagine.

In the second photo I give a near view of three of the hives, front and rear view, open and closed, and with the regulation stuffing in the door joint that never comes together. The center hive exhibits the method of inserting the frames. In a new hive the rear of the frames is covered with a glass back. After removal a few times the glass arrangement becomes broken, as shown, just below where it belongs; and finally it is replaced by a plain board. The tools necessary to work a Harbison hive are exhibited above the hive. The four tools at the right are levers used to loosen the frames. I generally used the light one with a straight handle; but there were emergencies when those with corkscrew handles had to be used.

The effect upon the frames will be noted by a glance at the brood-frame under the little window. The window is square, and the frame lacks two inches of being square. You can scarcely imagine how *agreeable* the handling of such frames becomes! The old style of boxes, made of unplaned lumber, is shown in the lower foreground. These were made without end or bottom; and the long knives shown were used to slip under the box and cut the comb loose. These boxes are still used by bee-keepers in Scott Valley. To determine when they are filled, rap on the top and the sound will give you the desired information. When the box is cut loose it is removed for a moment, and all loose honey scraped from the honey-board. This scraping is best done with an ordinary culinary chopping-knife. After due scraping, the box is returned for a few hours, when the bees clean



TOOLS FOR MANIPULATING HARBISON HIVES AND FRAMES.

up all of the drip and the box is ready for removal.

The saw and the hatchet were very necessary tools in refitting frames and nailing the rear door in place.

The late Mr. Levering was, however, outgrowing the old style of management; and, although 75 years of age at his death, he had introduced about 30 Langstroth hives, and was using one and two pound sections.

The present Mr. Levering decided to work the apiary in a great measure for extracted honey, and the hives were lengthened out at the top by adding a rim of the proper depth. Our extractor was a small three-frame affair, the first of the kind I ever saw, and I fervently hope it is the last. A three-frame extractor is never in balance except when empty; and in order to use the machine with any degree of comfort it had to be braced from the top in three directions. Those out-of-shape frames were a close fit in the extractor-baskets when new; but now when loaded with propolis they had to be scraped more or less; and you can scarcely imagine how agreeable it is, when one is in a hurry to do a good day's work at extracting, to have to stop and shave off the side-bar of a frame; then the frame has a cross-bar in the middle, and a nail sticks out just where your knife must go; result, a dull knife and a nail that must be driven in. All of these manipulations take time, and tons of patience. I have about 100 pounds of patience, and it would be exhausted in about an hour, and I shall not reveal to the reader my nevrous and mental condition in the late hours of the day.

There were two articles that were abundantly satisfactory, and the first was my uncapping-box. It was 5 feet in length by about 18 inches wide, 6 inches deep, with a wire-cloth bottom. Set at an incline it would hold the cappings for two days and drain them nicely. I like an uncapping box of this shape. It does not require frequent removing of the cappings. The cappings of to-day can be spread out in the evening and drain all night; then the next morning these cappings can be crowded to one end of the box for further draining through the day, and removed at night to the sun extractor.

The next article that was a real pleasure to work with was our tank. The present Mr. Levering had this made to order at Fort Jones. It is made of galvanized iron, 5 feet in diameter and 2 feet deep, and, according to my ideas of such things, it is the very best size and shape for a honey-tank. It will hold about 1½ tons. It is more easily cleaned than a deep tank. I improvised a wooden wire-cloth cover, and, though the honey was all strained through cheese-cloth, the cover was removed and the tank carefully skimmed before drawing off. As a result our honey was strictly clean.

A great many times I have noted in some grades of honey small black specks. These fine specks seem to elude several strainings, and I trace them to the lower end of the revolving spindle in the extractor. If this is not properly cleaned, and often, the grinding process produces a black substance that certainly specks the honey.

In planning to work this apiary for extracted honey there were several little details that had to be considered. In the first place, extracting-combs were of prime consideration. There were about 25 colonies that had died in wintering. The combs in these were promptly taken care of and fitted to the upper extracting-chamber. Then there were a great many of those old boxes that had empty comb in them. These pieces were all saved, and fitted into frames. When all available combs had been used I lacked about 400 combs of having a full complement.

We had no foundation; and Mr. Levering, who always had the welfare of the heirs of the estate in mind, had sold several hundred pounds of wax, and it would be highly detrimental to said heirs to purchase foundation. I disliked the idea of having the bees build those combs all new in the upper story (and using the green things for extracting); and in order to get good old extracting-combs, and give the bees the very best place for filling empty frames, I pulled up two empty combs from the brood-chamber and fitted them into the extracting chamber. "And now," said I to the bees, as I put the empty frames below, "you can have all summer to fill those combs and keep them for your labor, while I will make good use of these old combs above."

Mr. Levering had quite a desire to increase the 234 colonies to 300. He thought it would please the heirs of the estate to know that there were 300 colonies in their possession; but as I was to receive half of the proceeds from the honey and wax, I could not become interested in said heirs except to get as large a crop of honey as possible and then divide the net profits, and along that line I worked. It was, however, a poor season for swarms. We had not one, and our neighboring bee-keepers who were producing comb honey had but very few.

Before closing this Ramble I wish to call attention to our lawn-mower in the shape of Doc. Wright's white horse. This horse pastured all summer in the bee-yard. He walked to that position of his own volition while I was preparing to take the photo. The bees seldom disturbed the horse on the outskirts of the apiary, and the night-time was reserved for his operations between the rows of hives. I would occasionally find a hive tipped over in the morning; but as it would be a Harbison hive there was no harm done.

* * *

VISIT AMONG BEE-KEEPERS.

Comb Honey Without Separators.

BY H. R. BOARDMAN.

At Owosso I had abundant opportunities for looking through the markets, and I found here, as everywhere else, much inferior honey offered for sale that had been brought in by the farmers and slipshod bee-keepers.

The next morning I started out just for adventure, going out west of Owosso ten miles to Ovid, on the train. Here I at once struck a promising trail. I found in one of the stores some nice honey put up by a progressive bee-keeper. "A workman is known by his chips." I was not long in locating him, and a pleasant wheelride of five or six miles brought me to the apiary of Mr. H C. Binger, a bright young bee-keeper with whom I spent a few hours very pleasantly. Mr. B. has about 25 colonies in fine condition. He reports a moderate crop of comb honey of 1200 pounds, of excellent quality — greatest yield from one colony, 155 pounds in 160 sections. He uses no separators, clips his queens, carries on general farming in connection with bee-keeping. He takes just pride in reporting a yield of 49 bushels of wheat to the acre (average) on 7½ acres, undoubtedly the result of the same painstaking care that gives him success with the bees. He has a new honey-house and workshop, which, like his apiary, is a model of neatness and good order.

Of course, I scolded Mr. B., as I had other bee-keepers I had met, for being behind the times in not using separators. But I began to think it would not be beneath my dignity to listen respectfully to the arguments of these non-separator bee-keepers, and about the same talk was gone over as at Dr. Smith's. I afterward purchased this lot of honey and shipped it to Ohio, and I have not been ashamed of it.

"If you had your bees down near that swamp we came past back here a little way, they would be doing good work," I said.

"But it is only half a mile from here to the edge of that same swamp," said Mr. B.

"Then I am sure they must be doing nicely, and they do certainly appear to be."

He shook his head, and replied, "I think not."

"But I saw a great amount of goldenrod and a great variety of other bloom, and I thought at the time there was a bonanza for somebody's bees."

"They may seem to be working well," he replied, "but I have never seen much honey from goldenrod or any other fall bloom — not enough to give any surplus."

"Well, Mr. Binger, that has been about my own experience, I will admit. But I should like to look into some of your hives, if you do not object."

"Certainly not;" and in due time, with smoker in hand, he had a hive open for my inspection.

I was, after all, a little disappointed, for I had expected to see some few signs of honey-gathering — enough to whiten the combs a little, but there were not. Several others were opened, all showing about the same condition. Mr. B.'s crop was mostly from alsike clover, with a little basswood and white clover.

As the time came for me to mount my wheel again we walked down to the front gate together, and my newly found friend offered many little persuasions to stay over night, as he said there were a great many questions that he wanted to ask that he could not think of then, and he wanted to talk more about bees. I reached my hotel at Owosso just at evening, highly pleased with the day's adventures.

The next day was Saturday. It was a red-letter day in Owosso. Pawnee Bill's show was the great occasion. It had been talked of and anticipated for some days. It was very quiet in the morning; but as the day advanced, noise and confusion increased; and before noon pandemonium seemed to be let loose everywhere. The boys came in from the surrounding country. Many of them "got full," and talked loud and silly, and quite a number had to have the help of some good friend to keep on their feet, cutting a most undignified and disgraceful figure in public. It seems to me that these occasions are unprofitable to the community, and that their tendency is not to advance refinement, morals, or civilization.

I again boarded the train after dinner, to resume my journey southward. Lansing was the next place on my program, the former home of Prof. Cook. On arriving there I wheeled up into town to spend a few hours until the next train that would take me to Eaton Rapids. I rode around and through the grounds of the beautiful capitol of Michigan, down along the principal street, wondering what adventure awaited me next. I found about the same class of honey on sale here as at other places I had visited in Michigan.

While talking with a grocer, and making some inquiries about the local bee-keepers, he said, "There is a Mr. Larrabee, something of a bee-man, across the street."

"John H. Larrabee?"

"Yes, I believe so. You will find him just where you see that bicycle-sign."

I was not long in introducing myself to the very man I had wished to meet, and whom I had known for years.

"Well, how about the bees?" I asked.

"Oh! I don't know much about bees lately. I have about gone out of the business."

"Mr. Larrabee, do you find the bicycle business more profitable than bees?"

"I find it more reliable," he replied, "than keeping bees. Sometimes bees pay, and sometimes they don't."

"Do you know Wood, the man who went to California to raise queens on the isolated island of Catalina?"

"Well, now, I will take my wheel and go with you to the depot, and on our way I will give you an introduction to A. D. D. Wood."

We found Mr. Wood very busy, not raising queens nor handling hot bees, but at work in a smith-shop before a hot fire, where he could not stop, even to talk bees. I had only the pleasure of taking Mr. Wood by the hand, and, with an apology for intruding upon his his time, wheeled on to the depot in time to get the train.

Eaton Rapids is a very pretty wide-awake town. I have seen no such signs of hustling anywhere else, even in the larger towns and cities, as I saw here. The sidewalks, although wide and roomy, were inconveniently crowded with people from the country during the evening, although there was no extra occasion for it, except that it was Saturday night.

Mineral springs have played an important part in the past in booming the town, and are yet patronized to some extent. I did not see a single sample of choice honey in the town. It was dark with honey-dew, and very inferior. Hearing of some bee-keepers a few miles out I again mounted my wheel, and, in company with Ida, my niece, who kindly consented to act as pace-maker, wheeled out and made the acquaintance of Mr. Seely and his wife, both fine intelligent people. In the yard was an apiary of about 60 colonies in a rather neglected condition. The bee-master was cutting up corn. Both the ladies, Mrs. Seely and Ida, volunteered to go down to the field and help me interview Mr. Seely.

"I have come on purpose to talk with you a few minutes about your bees," I said, after being formally introduced by the ladies. "I am trying to learn something about the business."

"You have come to the wrong place to learn any thing about bees," he replied.

"Have your bees been doing pretty well this season?" I asked.

"I don't know."

"How much honey have you taken off?"

"None "

"But haven't the bees gathered any surplus at all?"

"I don't know," he answered again.

"Well," I said to myself, "he beats Dr. Miller." But I said, in one last effort to get a little encouragement, "You have some surplus on your hives now, I suppose?"

"I don't know—haven't looked at them at all. I put on the sections; and when they get done *making honey* I am going to take them off. Bees don't seem to do much with me, any way."

"Do you take any bee-journal?"

"No, I don't take any bee-papers. The fact is, I don't find time to look after the bees."

His wife said she had tried hard to have him either take better care of their bees or sell them and go out of the business entirely. I wanted very much to give him the same good advice that his sensible wife had, but I thought I'd better not on so short an acquaintance. These slipshod methods furnish an explanation for the inferior honey everywhere on the market.

A mile further on we stopped at another bee-yard. The "bee-man" was not at home. His little daughter said they had taken off some honey.

"Does your pa take any bee-journals?" I asked her.

"Oh, yes!" and she brought me several copies of GLEANINGS; and as I opened one and looked upon its familiar pages I could not but feel it was a sort of guarantee of better methods in the subscriber.

This concludes my adventures and experiences with the bee-keepers of Michigan. I have been treated with the utmost kindness and consideration everywhere. I have been really surprised to receive so much consideration among strangers, at the hotels, the railroad depots, and everywhere.

Something of a drouth has prevailed during the season over a considerable portion of Michigan, and the outlook for a crop of honey next season from the clovers is not promising. It would not be surprising if Ohio furnished the honey next season instead of Michigan, as the outlook was never better in Ohio.

As I sped along through the great cornfields in Northwestern Ohio on my way home, and saw the fresh green fields, well-filled barns, and stacks of grain, and gardens of vegetables in great variety and abundance, all indicating bounty and abundance, a feeling of pleasure came over me, and I said to myself, "I am *proud* of Ohio after all," and felt in my enthusiasm like taking off my hat and giving three cheers for the Buckeye State.

East Townsend, Ohio.

SWEET AND CRIMSON CLOVER, AGAIN.

A More Encouraging Report.—See Page 837.

BY THADDEUS SMITH.

There seems to be some disagreement in regard to the quality of sweet-clover honey. As I have had an opportunity of fairly testing it this summer I will give my experience.

The sweet clover that I have sown, and that which grows wild near me, afforded my bees good pasturage during a very dry spell in July and August, when there was absolutely nothing else for them to work upon, and enabled them to keep up their breeding, and store some in extracting-combs. They were to be seen thick upon the fragrant bloom from early morn till night for several weeks. One of my guests wished to see some sweet-clover honey, and so did I. We found some stored in extracting-combs just beginning to be capped. It was thick, and of a dark color and strong taste that was not very agreeable. Not satisfied with this I opened a hive with a new swarm in it, and found nearly all the frames filled with comb and brood, with some unfinished beautiful white comb in the outside frames, containing a dark honey of the same unpleasant taste. We concluded that the quality was so poor it was not worth taking, and felt disappointed in not getting some nice new honey.

In September and October we had a fine flow of honey from heartsease, and probably some from goldenrod. Extracting-combs and comb-honey supers were rapidly filled with honey equal in quality to basswood or white-clover honey. The sweet-clover honey contained in some of the combs in small patches appears to have been all capped over before the fall flow came on, as the cells containing the fall honey projected some quarter of an inch beyond those containing the sweet-clover honey, and it was easy to compare the two by scooping out some with a spoon or knife. Some one has said that sweet-clover honey would improve by age. I found that this had improved *some*, but there was room for still more improvement. But it was not so easy to extract two kinds of honey from the same comb without getting it mixed, and the sweet clover honey has left its mark in color and taste.

There was no new comb made in supers while the bees were working on sweet clover, and my comb honey is not tainted; and this honey from heartsease is as fine as I ever tasted. The bees quit the sweet clover when the heartsease comes in bloom; but the sweet clover was a good thing to tide them over the drouth. Without it I should have had to feed in midsummer.

My failure with crimson clover was not on account of being so far north. The trouble was to get a "catch," or a stand after the catch, on account of dry weather killing the young plants. It never gets as cold here as it does at Medina, or even at Cincinnati. I found the same trouble as far south as Central Kentucky, where I have a farm in the famous Blue Grass region. I have tried to get my tenant there to sow crimson clover instead of rye, for plowing under, but without success—too hard to get a stand. I now have a very fine catch here, sown in standing corn in August. The rains came at just the right time, and kept coming to keep it growing — first good stand in four years. Don't you think I am persevering? I think it catches better when sown with the chaff on. It holds the moisture. I don't think it will winter-kill, but may freeze out in spring, and be killed on account of wet land.

I am pleased with my experiments with sweet clover. Cut when young, and fed to cows, in stall, they ate it greedily. It will bear cutting two or three times or more. I plowed some under in my young peach-orchard, and planted late sweet clover. Turning under such a large amount of tops and roots can't help being beneficial. I am satisfied there will be no trouble to prevent its spreading where I don't wish it — not more than other clovers or weeds.

Pelee Island, Ont., Can.

[Why, friend S., you have given us a *tremendous* recommend for sweet clover. I have many times wondered why it would not give several cuttings like alfalfa if cut at just the right stage of growth ; and now you tell us it may be cut two or three times or more ; and when you say you are satisfied there would not be any more spreading from it than with other clovers, you have said about all that I have claimed. In regard to the quality of the honey, I should certainly say you have made a mistake unless you assure me that this dark unpleasant honey had the taste and smell of the sweet-clover plant. One need never be mistaken about sweet-clover honey, as both taste and smell declare what it is. Once upon a time we got two kinds of clover *seed* mixed —that is, the labels became exchanged, so that we did not know which was which. By smelling first of one and then of the other I decided, as plainly as any label could decide, which was sweet clover. Now, I have never seen any sweet-clover honey that was dark-colored or unpleasant to taste. I can imagine that the raw honey, before it had been uncapped, might have a rank taste. I am told that, in the vicinity of large cities, it has a dark color on account of the coal smoke that settles on it ; but, if I am correct, this does not spoil the beautiful pure sweet that well-ripened sweet-clover honey always has, so far as I know.—A. I. R.]

* * *

FOUL BROOD.

Questions Relating to.

Dr. C. C. Miller:—Having read your replies to sundry questions in GLEANINGS, I concluded to add to your troubles in that direction. The question of foul brood and how to cure it is uppermost in the minds of a great number of bee-keepers at present ; and although there are several books written on the subject they do not seem to cover the ground sufficiently, especially by leaving the mind in doubt by saying too frequently *if* or *almost always*.

Well, to come to the point I submit the following questions ; and if you do not feel inclined to answer them yourself, will you kindly submit them to some other wise man who has had experience with said disease?

Qu. 1.—Suppose you have foul brood in your apiary, and that the bees were at the starvation-point—*i. e.*, having no honey in the hive, and have to be fed ; would it be necessary to destroy *all* the combs, including those that never had brood in them? or will it do to take only all the brood away from all combs that ever had brood in them, destroy them, and feed the bees sugar syrup?

Qu. 2.—In following out the McEvoy plan, after giving the bees strips of foundation in order to set them to building comb, must all the frames be destroyed, including those that the bees have not worked on at all, keeping in mind that the bees have no honey previously, in which the disease could spread?

Qu. 3.—After melting out the combs in the wax-extractor (*a la* McEvoy), can the frames be used over again? If not, why use the hive (and not the frames) without further disinfection than the sunlight?

Qu. 4.—Is the disease in the honey the bees carry in their honey-sacs or in their blood?

M. R. KUEHNE.

Pomona, Cal., Oct. 17, 1898.

[The following is Dr. Miller's reply to the above.—ED.]

1. In a matter of so much consequence, the only safe advice must be to destroy all. There is a possibility that combs that have never had brood in them might be left with safety in some cases. When the disease is first contracted there is a limited time in which no spores have been developed, and nothing but the bacilli present. Keep in mind that foul brood is due to the presence of a microscopic plant, *Bacillus alvei.* The growing plant is a bacillus, and the seed is a spore. Compare it, if you please, to the thistle. A thistle is growing in a field, and you ask me whether, if you remove the entire plant, roots and all, there will be danger of any further spread of the thistle disease. The answer will be that it depends on the stage of the disease. If the plant is not yet in blossom, or if in blossom and no

seeds (spores) have yet been ripened and thrown off, the removal of the plant will be all that's necessary. If, on the other hand, seeds from the plant have blown over the field, digging up the plant will have little effect upon the future crop.

In the same way, before the bacilli have had time to ripen seeds (spores), if the combs that contain them are removed, that removes the disease. But if spores have been produced, and have gotten into all the combs, then all must be removed.

You will easily see that it is hard for you to be sure that no spores are present, so the only safe course is to assume they are present, and treat all the combs as diseased. If spores have been in all the combs, bringing the bees to the starving-point, and getting them to empty the combs of honey, will not suffice. Mr. McEvoy is most emphatic upon this very point, and says, "*All the old combs must be removed from every diseased colony*," and that "all" involves empty as well as full combs.

2. I don't like to be positive upon this point; but as Mr. McEvoy considers it perfectly safe to use the hive again without disinfecting, it seems that it ought to be safe to use again the starters that had not been worked at all by the bees. But it would be a better plan to limit the number of starters given, so that you need not count on having any of them left untouched.

3. Mr. McEvoy says it is folly to scald beehives in which foul brood has been; but he also says that, if combs have been broken down so that the floors have been daubed with honey, the floors must be cleaned. The frames out of which the combs are melted will be much the same as the floor on which ininfected honey has been spilled, and can not be again used without cleansing.

4. In the honey, the whole aim being to get such honey used up before it can be used to feed the young larvæ. C. C. MILLER.

Marengo, Ill.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

BEES DYING ON THE SNOW.

Question.—Last spring my bees came out weak in numbers, and I thought the cause was so many coming out of their hives when it was not warm enough for them to fly, and dying on the snow. Some days it seemed as though the ground was fairly covered with them about the hives. Is there any way to prevent bees coming out of their hives in this way? If there is, please tell us about the matter in your department in GLEANINGS, which I always read the first thing when opening my paper.

Answer.—In answer to this I will give my plan to prevent such loss. But first I wish to say that there are two causes for bees acting thus; one of which is bee-diarrhea, and the other the direct rays of the sun in and about the entrance. If the former is the cause, the bees might as well die on the snow as anywhere, for die they will, if they have this disease early in the winter, before there is any prospect of warm weather coming to stay; and all the fussing that is done with them is generally of no avail; but on the contrary, as a rule, it rather seems to hasten their death, if any thing, unless it comes settled warm weather, so they can fly out often to void their feces; and then, nine chances out of ten, they will dwindle down to such an extent before many young bees emerge from their cells that such a colony will be nearly or quite worthless. If the trouble is caused by the sun enticing them out when it is too cool in the air for them to fly, the cause should be removed by shading the hive. As the sunshine of February and early March is apt to entice out all bees more or less, and as the winds of winter are apt to blow cold air and snow in at the entrance of the hives, thus making the bees uncomfortable, I lean a wide board, as long as the hive is wide, in front of the entrance, this not only shading the hives, but keeping out wind and snow as well. Whenever a light snow falls I sweep the snow up over this board and still higher up on the hive, which gives additional protection. As this takes but a few moments, and gives outdoor exercise when I am apt to get too little, I consider that I am well paid for doing it. Should a day warm enough for the bees to fly occur, and I am at home, I take the boards down, laying them immediately in front of the hives, thus forming a nice spot, free from snow, for them to alight on, when the boards are put back at night. If I am not at home no harm is done, as the bees will fly out around the ends of the board, and come back the same way. Some think this winter care of bees too much work; but unless any beekeeper's time is worth $3.00 a day in winter I think he will be the loser by not taking time to do these things.

There is one point wherein some are deceived regarding dead bees on the snow. Bees can rise as safely from melting snow as from bare ground, if the air is only warm enough, and the board which is leaned over the entrance tends to keep the bees in the hives, and quiet, till the air is what it should be as to warmth. The degree of warmth required I find to be 45° in the shade providing it is still, with the sun shining; yet with even a warmer temperature the snow will often appear covered with bees, which the inexperienced are prone to believe were lost because the snow was on the ground. A little careful watching will show that these dead bees are those brought from the hive and dropped by the other bees while they are "house-cleaning" This house-cleaning is always going on when the weather will permit of a flight, and at such time all the bees which have died during the cold weather which has preceded this flight are carried out of the hive by the healthy bees; and where these dead bees are not too heavy the healthy bee rises in the air with the dead one, conveying it some distance from the hive, when it is dropped to the snow. Again, 100 dead bees on the snow make more show than 10,000 would make on bare ground. For these reasons we are often alarmed when there is no real occasion for it. Chaff hives are a great protection for bees in winter, not only from extreme cold, but in not allowing the rays of the sun to entice the bees out under unfavorable circumstances; and where any person expects to winter his bees outdoors my advice would be to use chaff hives for that purpose, in all northern latitudes. But even with chaff hives I think it pays well to use the wide board over the entrance.

DOCTORS DISAGREEING.

Question.—What is the trouble that writers on bees and bee-keeping are so opposite in their opinions and practices? I have looked in vain for something I could follow with a certainty of success, and as freely as I would a teacher of any of the common branches of human knowledge. Don't any of you who write for the bee-papers know what you are writing about?

Answer.—Well, I don't want to speak for the other fellow; but I know a little about the elementary principles of bee-keeping, just enough to know that it does not exactly compare with the rules in arithmetic. Twice two makes four, every time, no matter by whom multiplied, nor at what season of the year the computation is made, nor in what locality; hence we have the rule of multiplication as being always the same; the same of addition, subtraction, etc. But if we come to apply any rule similar to the above to the bees we find it won't work, for the reason that every season brings its changes; every locality is different from another, and every bee-keeper does not "work in another's harness." For instance, one season, just at the close of our basswood-honey harvest, I found I could introduce a queen by letting her run in at the entrance, and smoking the bees two or three minutes after I had let her run in; and as I did not lose a single queen out of some thirty or forty I set it down as a rule that queens could be thus introduced safely every time. But when I came to use the same rule the next year I found it did not work as formerly, as three out of every four queens put in that way would be lost. At the time I was having such success a bee-keeper living in a different part of the United States wrote asking how to introduce queens, and in reply I gave him my safe (?) rule. Of course, he did not have the same conditions I did when I was successful, and, not working just as I did anyway, he lost every queen he tried. The result was he felt very much toward Doolittle as the questioner does toward all the writers on bee-keeping. Now, why was it that my correspondent failed with the plan, and that I did later on? Simply because conditions were not alike in all the cases. Thus we see that no rule in bee-keeping can be formed that will do to follow throughout the country, as can the rules in arithmetic; and the only thing we can do is to try the plans of others *cautiously* till we know they are suited to our wants, using charity all the time, otherwise we shall be something like that "American Duel" the late James Payn was so fond of telling about, wherein two duelists, with one second, met within doors and drew lots to decide which of them should shoot himself. A was the unlucky man, and, without a word, he retired into the next apartment to carry out the purpose of self-destruction. B and the second, both very much moved by the tragedy of the situation, remained in listening attitudes. At last the pistol was heard, and they were shuddering with emotion and remorse, when suddenly in rushed the supposed dead man, triumphantly exclaiming, "Missed, by thunder!"

There is a great difference in men. Some experiment carefully, proving every thing critically, step by step, as they go, arriving at an almost definite conclusion with the first experiment, while others experiment in such a careless manner that their experiments at the end of several years are of little value. Notwithstanding all of these drawbacks, any careful reader of what is written on apiculture will find much of value after he has sifted the chaff from the wheat. It is often necessary to apply what was written a long time ago in the "good book," where it says, "Prove all things; hold fast to that which is good," when reading much of the literature of the day on many other subjects besides bee-keeping. However much there may be of imperfection in our bee-literature, I should be very loath to dispense with it for $100 a year, for it is to this same literature that I owe nearly all the knowledge I possess relative to apiculture.

HEADS OF GRAIN FROM DIFFERENT FIELDS

PLAIN SECTIONS WITHOUT SEPARATORS OR FENCES.

Mr. E. R. Root:—I notice in GLEANINGS of Nov. 15th a Straw in which Dr. Miller mentions plain sections being held in place without separators. Now, as I have been somewhat mixed up in the bee-journals with a way of using plain sections without the use of a cleated separator, but having free communication all around the section, you have perhaps noticed my name in its connection. If so, I wish to inform you that I have succeed-in perfecting a super with sections so arranged. It is my intention to exhibit the same before the convention of O. B. K. A. at Guelph next month; and if it meets with approval from the wiseacres (which I have every confidence it will) you will no doubt hear more from it soon. I notice also in last GLEANINGS you speak about wet, wet, wet. We too are having wet, wet, wet, and wet again—rain eight days out of ten for the last four or five weeks. I trust this may stimulate the clovers, which received such a parching during July and August last. D. W. HEISE.

Bethesda, Ontario, Can., Nov. 22.

EDITORIAL BY E. R. ROOT

The Minister of Agriculture of Mexico has ordered a Spanish translation of Langstroth's work on the bee. This will be a boon to our Spanish neighbors in the tropics.

At the last meeting of the Ontario Co., N.Y., Bee-keepers' Association, the sum of $5.31 was raised for the Langstroth-Monument fund. The same has been received and will be duly credited.

I omitted to state in our symposium that the plain section will probably render feasible the use of machine section-cleaners when old-style sections would not. We have already got track of one that we feel sure will be a success; and as soon as it is ready to put on the market we will give notice through these columns.

Sixteen extra pages this time. The symposium in this issue takes so much space, together with the index, that we found it necessary to enlarge this issue. By the way, how do you like our Christmas number, taking it all in all? We are planning new features for the coming year; and those of our readers who stay with us, I feel sure, will be richly repaid.

ENGRAVINGS OF FENCE HONEY MISLEADING.

Some criticism has been offered, and perhaps not without some grounds, that the engravings in the *Review* and Gleanings, that have shown fence honey, have been misleading to some extent. In this issue I show some very fine honey produced in old-style sections, and right below it some fence honey. At the risk of committing the same sin again I will say I honestly believe that that shown in the first named, while it looks as nice as the other, is considerably better than the average *fancy* in old-style sections, while the fence honey is very close to the common run of the fancy that *I* have seen in plain sections.

SECTIONS FILLED SOLID TO THE WOOD.

Mr Merton B. Chase, one of our local bee-keepers, who produces such fine honey, thinks we ought not make too much of the fact of having the cells sealed next to the wood in section honey. If we set up too high a standard he fears that, in actual practice, we may not be able to reach it, even with our fancy. There is a good deal in this; but somehow I do like to look at solid slabs of honey sealed clear out to the wood; and if the fences, or any system of management, will enable us to do it, let us learn how it is done. I do not claim that the fence alone will accomplish it; but with other agencies with it we may be able to go a long way toward it.

BEES AND THEIR COLOR NOTIONS.

In the *American Bee Journal*, the question is asked in the Question Box whether bees are less likely to sting one with white clothing than with black, or whether bees are in any way irritated by any particular color. In response to the first, the answer is "yes" from nearly all the 26 bee-keepers. As to the second question, there is less certainty; but when an answer is given, dark or black is specified. Our readers will remember that I once doubted whether black had any thing to do with irritating bees, and made fun of Dr. Miller for suggesting it. Reports immediately began to come in, sustaining the doctor's position, and poking fun *at me*. There is now no room for doubt, even if I *am* the one that is worsted.

J. E. CRANE AT THE HOME OF THE HONEY-BEES.

We are enjoying a visit with Mr. J. E. Crane, of Middlebury, Vt. I fully intended to call on him this summer to talk fence and plain sections, as he has had some experience with them this past season; but as it was not possible for me to do so a correspondence sprang up, a part of which is given in this issue. You can imagine with what pleasure we have been discussing a number of these little problems; and as Mr. Crane is a man of wide experience, owning and operating some 500 colonies, I feel like "banking" on pretty much all he says. I have been fortunate enough to submit proofs of all the fence matter to him before sending it to press; and while I have not directly secured his seal of approval, I believe we can not be very far out of the way or he would "straighten" us out.

He will remain with us for several days, and I wish I could invite our readers to our little unconventional conventions that we have every evening over at the house. Perhaps later I may be able to give our readers a kodak-phonograph peep behind the scenes. We shall see.

DOOLITTLE AND HIS MEAT-BLOCK.

Elsewhere in this issue I have referred to the fact that Dr. C. C. Miller eschews elaborate office furniture, and takes in its stead a common wooden stool for his typewriter desk, and that reminds me that G. M. Doolittle, of Borodino, N. Y., a man who is equally prominent as a writer and as a bee-man, uses a sort of meat-block as a typewriter desk. He hies himself away, or did do so, to a little office in his shop, where are a stove, stationery, books, and bee-journals. Well, when I was escorted into this sanctum I exclaimed, "Why don't you have a nice office desk, befitting your position as a professional man?" I can not remember exactly his reply, but it was something to the effect that he was nothing but a plain ordinary man, and that a meat-block on which to support a typewriter was good enough for him. But why didn't he have a light cheap table? Said he, "I want something solid so that, when I strike the keys, they will respond to my touch." Then I turned and looked at Doolittle, and took in his powerful physique, When I measured with my eye the size of his hands and the strength of his muscular arms I concluded that a meat-block was about right. He needed something that would not permit of a typewriter joggling as it would do on a light flimsy table.

I do not know whether these personal reminiscences concerning our apicultural writers are interesting to our readers or not; but I believe some great man has said that half the world is interested in knowing how the other half lives; at all events I am sure that half of our bee-keepers are always intes sted in knowing something about Doolittle and Miller. As a pair they came very near being the leaders ers in apicultural literature, in spite of the fact that they do not know any better than to use such miserable cheap desks on which to pound out their thoughts.

SNAPSHOTS AT THE HOME OF DR. C. C. MILLER.

On my return from Omaha I stopped off at Marengo, Ill., the place where Stray Straws are gathered. Of course, I was armed with a camera, but I did not use it on this occasion, as I borrowed the doctor's, who was so well pleased with my little folding pocket kodak that he bought one like it. I told him one forenoon that I wanted to see him get down to business writing Stray Straws, and that he should sit in his office chair, in front of his favorite mahogany roll top or drop cabinet desk, with his favorite bee-journals and other paraphernalia near at hand, and that he himself was to put on his blandest smile.

Instead of procuring a very elaborate office desk he picked up a common stool on which was his typewriter. This he placed in front of the lounge. In place of a swing-back swing around elegantly equipped office chair he took out a common straight-back affair. He then pulled off his coat and vest, hung them over the back of the chair, scattered books and papers, especially bee journals, around on each side of him, on the *floor*. Then I took the little kodak, set it on another stool, and proceeded to take a snapshot, or, rather, a "time exposure."

"There, that is splendid," I said; but Mrs. Miller and Emma protested, "Oh, that vest looks *so distressed!* and then, how it looks to have books and papers scattered all over the floor!" I insisted that I wanted every thing just as the doctor *usually* has it when he is writing Straws. To fix him up real prim, and to have every thing orderly, wouldn't do. They finally yielded, though reluctantly, and I pressed the button. I don't mean to imply that the doctor is more disorderly than the *average man* who has women "as neat as wax" around to "pick up after him." But I wanted our readers to see the man of Straws in his free and easy style "at home."

I asked the doctor why he set his stool so far out in the room—why he didn't hie himself off into one corner. "Oh! when I get tired," he answered, "I stretch myself out on the lounge, and rest."

Well, the result of the shot is shown in No. 2. I don't envy him the stool and the *straight-back chair;* but I do begrudge him that comfortable lounge, so inviting, and the *time* it takes to use it. Yes, I begrudge him that quiet retreat at home, away from the whirl of machinery and the frequent interruptions from employees.

The doctor has a beautiful home, inside. Magnificent and expensive hand paintings adorn the walls. Books, papers, and easy-chairs greet the vistor.

After I left that home — a place that seems like home to me—the doctor tried his hand at kodaking, and the results are shown in 1, 3, 4, 5, and 6. Under No. 1 the doctor wrote:

1. Miller frame, ½ bottom-bar not yet nailed on. 2. Frame filled with foundation, and little sticks embedded. 3 Foundation so far drawn out that sticks no longer show. 4. Same with unsealed honey. Oct. 13, 1898.

The doctor showed me some of his frames of foundation, and also the combs that had been built out on the sticks. I would explain that he uses square sticks about as small as can be sawn, say about the size of a toothpick, and in length about equal to the depth of the frame. Foundation is put in, and then the sticks are inserted in their proper place. I believe the doctor values the sticks because they are self-supporting, require fastening neither at the top nor bottom, and effectually prevent all sag of the foundation, thus enabling him to use sheets that fit clear out to the end-bars as well as clear down to the bottom-bar. He showed me quite a number of his combs that were built out from foundation thus prepared, that looked like solid boards.

Of snapshop No. 3 the doctor wrote:

Miller house from southwest. Sept., 1898.

This is a very natural view. Say (his women-folks mustn't read this), I have been wondering why the doctor did not paint the whole of his house instead of stopping at the point just over the tops of the trees. I know he does not believe in painting his hives, but I did not suppose he was a believer in doing a half-way job on the outside of the house; for inside it's just lovely.

Of picture No. 4 the doctor writes:

Bees brought home from out-apiary, waiting to be put in cellar. Shop at left. Oct. 15, 1898.

These are eight-frame hives having cleats at the end, for convenience in lifting and handling. They are all numbered by means of a tin tag painted white, the number being in black. The tags may be seen on the front of the hives. Under the shop shown at the left is a large bee-cellar. The first floor above is used for nailing up general work, such as hives, and for putting up supers. The second story is for general storage.

No. 5 (the number does not show, but it is beneath 2 and 6) is thus spoken of by Dr. Miller:

Wagon-rack for hauling bees. Holds 22 colonies, and 9 go in box under rack. Oct. 15, 1898.

Something of this kind is almost indispensable. Without it one could carry only about half as many colonies, and even then with not the same security.

Of No. 6 the doctor has this to say:

Sixteen potatoes (Carmen No. 3, ½ bushel), 28¾ pounds; 3 largest potatoes weigh 6 lbs. 9½ oz. The stick lying on the potatoes is a foot rule. Oct. 11.

OUR HOMES,

BY A. I. ROOT.

And when he was come near he beheld the city, and wept over it.—Luke 19:41.

Then said Jesus, Father, forgive them, for they know not what they do.—Luke 23:34.

In the Old Testament we read of God's anger with people when they were disobedient, and committed sin; and we read, too, of the terrible judgments that he visited on them when they were persistently disobedient; and, for that matter, even during this present day we have abundant evidence of God's terrible judgments when people keep right on committing sin after repeated warnings. When Jesus came into the world he saw sin just as God sees it; but as he was *both* human and divine, he took a middle stand, as it were, between humanity and God the righteous Father. When he looked over Jerusalem he had the power to destroy it utterly; but his human heart comprehended and sympathized with humanity; and instead of the condemnation that the inhabitants deserved, especially those who stood in *high places*, he stood still and wept in real sorrow. For some time back I have been contemplating humanity — not other folks, mind you, altogether, but I have *almost* wept in contemplating the sinfulness and depravity of my own heart. I am one of humanity, and a poor feeble specimen at that; but yet humanity streams through my veins, and I am part and parcel of even *sinful* humanity. Were it not for the blood of that same Jesus who cleanseth from all sin, where should I be?

I am now going to take up an interpretation of the little texts I have chosen, in a little different way from what the average minister of the gospel would take it — not that he is wrong, by any means, but only that I, perhaps, may have a glimpse of a field different from his own. I want to consider first the especial kinds of sin that the great business world is guilty of—sins that we may well weep over instead of getting angry about them and calling people hard names. May God give me grace and wisdom that I may avoid showing up human weakness and that alone. We all know how easy it is to look at the shortcomings and frailties of our neighbors. Please, dear reader, do not think I wish to show how bad people are compared with myself; and please do not think that I love to dwell on that side of humanity.

When we wanted to buy a new large engine we consulted a great many catalogs, and talked over the matter with a great many different agents for great manufacturing establishments. An electric plant has lately been placed in our town. They have a new engine — a most beautifully running machine, built especially for running electric work. We decided to purchase one of that make. One thing that influenced us strongly was that the agent declared that every engine of their make was tested while standing on three points or cones. It was made to work so still, and was so perfectly balanced, that it could be run at full speed without being even bolted down to the floor or any thing else. I considered this a sufficient guarantee of the quality of their work; and the one in our town runs so still that one might easily use it for a writing-desk. So the order was given for a 400-horse-power engine. It was very carefully taken from the car, planted on a solid bed of masonry, and securely bolted down. But imagine our surprise when it not only shook the foundation but also our buildings adjoining, even before trying to make it carry a load. We wrote to the manufacturers, and remonstrated; but they declared most emphatically the engine was perfectly balanced before it was sent out, saying they would send a man around after a while. But when Thanksgiving day came, and no man appeared, we began to be troubled and wired them to send an expert at once. Here is the answer to the telegram, of course omitting names:

At your request, expert will arrive Wednesday. Engine ran beautifully here.

You will see that, even in a telegram, they declare once more that the engine ran perfectly before it was shipped. I met the expert when he got off the train, for I felt troubled in regard to the matter, and was anxious to know if it was any fault of ours in setting it up. Perhaps I might say that I declared in the outset that that big balance-wheel, weighing several tons, was not accurately *balanced;* but our people assured me that that *could* not be. The expert took off his coat, and went right to work. I stood near to provide any thing that might be wanted. He said he wanted a lot of putty, or, if it were handy, some yellow clay worked up into balls. When I suggested that five or ten pounds would probably be sufficient, he smiled and said he guessed I had better get clay, for they might need *thirty* or *forty* pounds. He first had a rest made solid and secure, right close to a polished part of the great shaft; then while the engine was in full speed he made a mark on the shaft as it went around. The balls of clay were then stuck fast to the inside of the rim of the balance-wheel, on a point opposite where the mark was made on the shaft. It was not thirty or forty pounds that was needed to bring that great wheel into balance, for before we had got through we had put on *172 pounds!* No wonder our buildings weaved to and fro when that great wheel revolved. The makers had done *something* toward balancing it. They had put on about 60 pounds of cast iron, and they had got it in the proper place, but they did not get on enough within 172 pounds.

Now, this engine was made at a very large establishment; and I believe that, as a rule, they do very nice work. The only reason the expert could give as to why they let a machine worth $2000 go out of their works in that shape was that we kept hurrying them up when we found they were not likely to ship it promptly at the time agreed on. They were in too great a hurry to get it aboard the cars on the date specified in the contract. Shall we put in a bill for damages, delay, etc., and decide that they are a set of clumsy rascals? God forbid. No lives were lost on account of that carelessness, and probably no great damage to property resulted. The foundation, that cost a lot of money, may have been somewhat injured We can not tell exactly just yet. In view of the fact that we have to meet such things almost every day in a large business, shall we not rather weep over human frailty, and conclude they really did not *know* how badly they had done their work? We have not heard from them at the present writing, so we do not know what they propose to do about it.

Very soon afterward I felt obliged to go to the dentist's because a filling had dropped from one of my teeth. With all the care and responsibility of our new establishment, a grumbling tooth was not a very desirable companion. Whatever you do, dear friends, keep your teeth cared for, especially if you have responsible work on your shoulders When I got back from the dentist's, one of the carpenters greeted me with: "Mr. Root, has anybody told you that the new elevator has gone all to smash?"

The new elevator had just been started that morning. It cost $400, and it was built to carry a big two-horse load of lumber, even if the lumber was 16 feet long, from the basement to any one of the rooms, even up to the third story. When I first heard the news it gave me a sort of dazed feeling. I said to myself — no, I guess it was Satan who whispered it — "Well, you might as well give up and quit trying to have any expensive machinery; just disaster after disaster, and breakdown after breakdown, etc." The above is what I *thought*, mind you. I did not *say* a word out loud, but passed along trying to look cheerful and pleasant. My little prayer, "Lord, help!" started up of itself, and I added an emphatic amen, for I felt it was needed; and then my informant went on. He said, "They say it started up of itself." He meant the elevator; but *I* was thinking of my little prayer. What a pleasant thing it is to have good things "start up" of themselves from the force of habit! Then he went on: "It first went down to the bottom, then it turned and started for the top The cable unwound and got into the machinery, and tore the big drum all to smash. The whole thing is a perfect wreck." I had been hoping and praying that the thing was not so bad after all. Mechanically I approached my box at the mail-desk. The lady who opens the mails handed me a letter, saying, "I have just opened this letter this very minute. I thought perhaps you would like to see it." Here is the letter. I think I may venture to give the name this time.

Gentlemen:—Our man reports, on returning here, that there was one thing that he forgot to tell your carpenter. When he builds the house on the roof, have him put a piece of wood about two inches from the under side of the cable, and about 10 feet apart, so if the cable should possibly slack up it will not sag. When the cable is taut it will run free; but if any thing should get underneath the platform, and the cable should slack up, it would sag on the roof between the top sheaves, and this would not let our slack-cable device work properly. Please have your man attend to this. EDMONDS ELEVATOR CO.

Cleveland, O., Nov. 30.

Well, the letter was a partial answer, at least, to my little prayer. It threw the responsibility on the manufacturers and not on ourselves, you see. Now, dear friends, I suppose you know that I never rejoice when I find out that some loss lies on my neighbor's shoulders instead of on my own. That would be a poor sort of Christianity, but it was perfectly right and proper to rejoice that the disaster was not the result of any stupidity and blundering or meddling on the part of our own people. Pretty soon I found John and Ernest, and they told me they had already telephoned the factory, and that the man who put up the machine was on the way to our place. He reached here an hour or two later, and found the damage was only a few inexpensive castings that could be easily replaced. He telephoned for them, and in a few hours our big elevator was "a thing of beauty" once more.

By way of recommend to the above elevator, permit me to give part of a conversation that occurred between myself and the man who came here to set it up. When he had finished his job I said:

"Mr. A——, does this elevator require a specially appointed man or boy to run it, or can it be used by any one who wants to move freight?"

"Why, let anybody use it, of course, who wants to. Any man or boy in any establishment will very soon learn how to work it. It can not get more than so high nor more than so low, and that is all there is to it."

"Do you mean to tell me, Mr. A——, that you put up elevators all over the country, and guarantee them, with the understanding that any man or boy in the establishment can work them?"

"To be sure, we do."

"Well, then I want to say to you that you must have a very good machine indeed, and must take very great care and pains in putting it up, for we have had more breakdowns and troubles with elevators during the last few years than with almost any other one thing."

Now, the point before us is this: Here was a good man and a gentleman — an expert in the business, and an old hand at it, and yet he forgot a matter of *vital importance* until he got on to the train and was on his way home. Had the company wired us, instead of waiting to write a letter, it would have saved them quite a few dollars. One who goes through the world demanding his rights, right and left, wherever he goes, might call the above criminal carelessness; but a better way is, I think, to say that, as no lives were lost, and as the company made good the little mishap, we had better let it drop, remembering that, in this world of ours we can not have absolute perfection in any thing.

My illustrations so far have been with machinery. How is it with doctors who hold human lives in their hands — yes, on the very tips of their fingers? I wish I could say that there is less half-heartedness among the medical fraternity.

Some years ago my old friend, Rev. A. T. Reed, thought I was getting a little too extravagant on the lean-meat diet. He said there were excellent physicians in most of the great cities who did not indorse such treatment at all; and as my health was poor he urged me to consult one of the leading physicians of a near city, and promised to go along with me. The great man sat at one side of the room while I sat at the other. Bro. Reed asked him if it was not necessary to look me over a little. He said it was not. He could tell all he needed to know about me by looking across the room. Instead of the doctor asking the patient questions, the patient asked the doctor questions, and the doctor responded mostly by yes and no. When I asked him what the fee was for a few minutes' conversation, he opened his lips enough to say "Ten dollars," and that was about all. He did not write any prescription, did not give any medicine, nor any thing at all except a few pills, which he said might give temporary help. He said I should get away from business, and go to California. After I got to California I found there was just as much need there of avoiding fruits and vegetables as there was at home. In fact, I rather decided that I felt *better* out in the frosty air of my native home than in a country so mild that it never freezes. Now, I am trying not to be too severe in this case. I try to believe this physician was a good one, and a great one in certain cases; but I do think, in view of the fact that he was going to get ten dollars for his services, he should have looked the patient over, asked him some questions of his own accord, and given him some sort of advice that would make a sentence of more than three or four words. My opinion was, and is still, that he was not only a *half*-hearted doctor, but that he was a *hard*-hearted doctor. They called him a "Christian physician;" but it is hard work for me to scrape up faith for that kind of Christianity. I might give you a dozen more illustrations, but I shall use only one.

Our eldest daughter had been for some years in very poor health. A good many physicians were consulted, with about the result I have mentioned above — a good-sized fee coupled with a good-sized indifference, so it seemed to me, in regard to the life or death of the patient. In this I refer to the big city doctors. Our home physicians did what they could, but confessed the case was a difficult one. We finally went to a leading surgeon in Cleveland. He said she would have to undergo an operation. It would take several weeks, however, to get ready for the operation. Some apparatus was sent, for her to use meanwhile, but it was not at all suitable. It was returned, with full explanations. Some more was sent, but that was not suitable. The *third* lot was promptly returned because they were too indifferent in regard to the matter to give the case ordinary attention. Then these great surgeons tried to make us pay for stuff that could not be used, and never was used, but promptly returned. They did not get their pay, however, neither did they get a chance to perform the surgical operation.

By my advice our daughter then consulted Dr. Lewis, the lean-meat man. He is not a surgeon, you know. He made an examination, and thought she *might*, perhaps, be obliged to have the operation performed, but advised that she get well and strong first on the lean-meat diet. She said she could not bear beefsteak, and that it was not any use to try to treat her that way. She said she would die that much quicker, that was all, and perhaps die of starvation if she was obliged to *eat meat*. She *did* learn to eat meat, however, and now prefers it to any thing else, even if she could have her choice. But my story is not done yet. I think the second time she called on Dr. Lewis he noticed something peculiar in the way she walked. He asked her a great number of questions, made a particular and very thorough examination of her spine, and then declared abruptly that the trouble was in her spine, and that the surgeons were entirely off the track. They were going to take away organs that were all right, or perhaps suffering indirectly from the real trouble — the spine. He said she would have to go to bed and lie down, and not get up for a month. Then he advised sending her to some place where she would be treated particularly for diseased spine. These people wanted an enormous price for taking her into their institution. After she got there she did not have the comforts of an ordinary home. Her room was not sufficiently warmed; her food was not properly prepared, and, in short, they had an enormous price for very meager attention, and we had to have some downright quarrels, almost, over a sick woman's bed, before we could get them to make the jacket or "harness" needed to hold her weak spine in place. They finally did make something that answered temporarily; but to get a good apparatus we had to send to New York city and throw away the old one. Of course, the readers of GLEANINGS will know that we prayed as well as worked to save the dear one's life, and God heard our prayers. She learned to relish the lean-meat diet, and, as I have told you, preferred it to any thing else. And, by the way, she learned to love and value her own home, after she returned from the city, in a way she never did before. Little by little she got outdoors so as to take the fresh air. First she took a few steps on the porch; then I would see her slowly going down the walk. Proper food, pure air, and good care helped her to pick up gradually but surely.* She still wears the apparatus, to prevent her spine from getting back into its old crook, and she has recently walked half a mile and back in one afternoon, as straight as anybody, and she will in a short time, doubtless, be able to dispense with her "harness," as we call it, entirely.

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*Let me explain to those who may be similarly afflicted, that her trouble was what is called Potts' disease, or tuberculosis of the spine. When she first undertook to walk, her shoe had to be built out three-fourths of an inch. You see the disease had gone so far that one limb was really shortened or drawn up that much. When she began to get out in the open air, a little of the extension of the shoe was taken off, and after a while a little more, and in five months it was all removed. She now stands squarely on both feet, like anybody else. This last, I confess, was a revelation to me. I supposed that, when one limb was shortened by disease, it would have to remain so.

Now I am coming to the whole point and summing-up of what you are to do. Other homes have trials, as I know from the letters from many dear friends like those in and around our own home. Most of my readers who are gray-headed have learned by sore and sad experience that we must not demand too much of humanity. Troubles will come with machinery in consequence of half-heartedness in humanity; and, sadder still, this same half-heartedness, or lack of thoroughness, is to be found where human life and health are at stake. What shall we do about it? Shall we go to law and seek to recover damages? Well, if we were never half-hearted *ourselves* in a like manner, we might give that sort of advice.* Of course, there are times when criminal carelessness has to be punished. The man who deliberately sells tobacco or beer to boys needs to be stopped at once by the strong arm of the law; but if your hired man makes a mistake resulting in a loss of property I would advise you not to be too hard on him; and if your family physician has too little enthusiasm in caring for sick ones, stand by him, go with him, and try to infuse a little genuine enthusiasm into him. Enthusiasm is contagious, thank God, and we all need to catch it—that is, we need that kind of enthusiasm that prompts us to love our neighbors *more* and ourselves *less*. This world is full of troubles such as I have outlined. Sometimes it does us good, and does the world good, if we can weep over it in sorrow as Jesus wept over Jerusalem while he prayed for thoughtless humanity; and a great many times, when things are going very badly and something has to be done, I think it is well to weave into our prayers the wonderful charity and love expressed in that *other* text, "Father, forgive them, for they know not what they do."

OUR ROLL OF HONOR, OR THE NAMES OF THOSE WHO HAVE TAKEN GLEANINGS FOR 25 YEARS OR MORE.

Every little while somebody, in renewing his subscription, makes the remark that he has "taken GLEANINGS right along ever since it was printed by windmill power." Perhaps I might remark that the first sheet of this journal was taken off the press 26 years ago the 6th day of this month. There is not much danger of the event being forgotten by either Mrs. Root or myself, for a little blue-eyed girl came into our household just a few hours before the pages of GLEANINGS were spread out to my gaze. Well, never mind. Blue Eyes has now a very pretty home of her own, within a very moderate stone's throw of her father's and mother's home. And now I want to know how many there are whose eyes meet this who have taken GLEANINGS for 25 years or more. Just send in your names, and a little more if you feel like writing it, and we will try to give it a place in print. Your old friend A. I. Root has been planning a very modest little Christmas present for all who have stood by our journal through thick and thin during all these years. We will try to have a little symposium of letters from the "veterans," in our next issue. I wish it were possible for us to get together and sit down and tell stories about the olden times. Some of these younger ones do not seem inclined to *believe* that we have been over and over, years ago, the things they are just now discovering, and which are supposed to be brand-new. But we would not exclude the younger ones from our party, dear friends. Do not imagine we have got the idea that *wisdom* dies when *we* die. We are glad to see the boys outstrip us and leave us behind. Who ever heard of a father and mother who were jealous of their own children? Now, then, get up and speak your little piece. If you should stand up all at once, and talk all together, it wouldn't matter, for we will put it all in order when it reaches the Home of the Honey-bees. I am dictating this on my 59th birthday, Dec. 9, 1898.

HIGH-PRESSURE
GARDENING
BY
A. I. ROOT.

DIGGING POTATOES, ETC.

In all my potato-growing thus far we have dug our potatoes with a sort of shovel-plow digger—a shovel-plow with steel rods sticking out behind. Well, this digger is an immense saving over digging by hand; in fact, I have dug my potatoes and put them into the cellar several times, where the yield was good, at a cost not exceeding 3 cts. per bushel. Now, if there were not any thing more to add, our friends might well inquire what I wanted of any other kind of digger. Well, there *is* just one other circumstance that *ought* to be mentioned. Three-fourths or perhaps more of the potatoes can be put into the cellar at a cost of 3 cts. a bushel; but to get the other fourth out of the ground and get them into the cellar will cost anywhere from 10 to 15 or perhaps 20 cts. a bushel; and, worse still, there will be a great many nice potatoes that you will never get at all. We usually put in rye after our late potatoes; and to get the ground in good trim we go over it with a two-horse cultivator. This collects the vines, and brings a goodly share of the remaining fourth of the potatoes to the top of the ground. The boys follow the cultivator and pick them up; then we run the Acme harrow over to fine and level the ground, and this brings to light another lot that has to be picked up. Then a boy follows the grain-drill and picks up all he can find. After a good shower there is still quite a lot to be picked up if the weather does not get so cold meanwhile as to freeze them. This season we had a good many spoil in this way. Now, I planned to have one of the best high-priced diggers, that would leave *all* the potatoes on the top of the ground, so that they could all be picked up at one operation. At the Omaha exposition where all the agricultural tools known, or pretty much all, were on exhibition, I selected a potato-digger; but owing to the continued and unprecedented wetness we were never able to give the digger even a fair trial. An agent for another digger that had much less machinery about it thought his would work all right, even if the ground *was* wet; but we had to give it up. Neither one of the high-priced machines did very much better than our old shovel-plow digger that has dug all of ours for ten years past, and we have loaned it to the neighbors right and left, and it still does very good work. One of the high-priced diggers was returned to the manufacturer: the other we are to hold over and test another season; and we finally, as a last resort, finished our potatoes with the old digger. But rains caught us so much, and heavy frosts later on, that we hustled them into the boxes wet and muddy, and got them into the cellar as best we could; and while it rained we poured them from one box to another, shook out the dirt, and got them dried out sufficiently to prevent rot. But I tell you we had a hustling time of it. We lost a few of the New Queens in that patch up in the swamp, that made a second growth, by having them frozen where they stuck out of the ground. We took hoes and tried to cover them up before each frosty night, but some of them got caught nevertheless. On account of the exceeding wetness we could not get down under the hills as usual, and more of the potatoes were cut in digging than I remember having any year previously.

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* Forgive our debts as we forgive our debtors.

Now, there are several varieties of potatoes that will keep over until planting-time just as well where they are cut at digging-time, as any of the others. We are saving out these cut ones for our own planting. I have done this several times, and do not see but it answers just as well as any. Those that got frosted by sticking out of the ground we overhauled shortly after digging, and the frosted parts cut off. These, too, seem to be keeping all right. I see by the *Ohio Farmer* and *Rural New-Yorker* and other agricultural papers that many others owning high-priced diggers have, like myself, been obliged to dig by hand this season on account of the incessant rains—at least I see they have been having the same degree of wetness all through York State, Ohio, and many of the neighboring States.

Now, when we are obliged to dig by hand, or with a cheap shovel-digger, a little calculation will, many times, save much expense. While visiting Dr. Jaques (mentioned in our previous issue) I found his men digging Early Ohio potatoes on a plan that was quite expeditious for handwork. The soil around his home is very light and friable; in fact, it is an ideal locality in the way of soil for market-gardeners. The potatoes were dug with long-handled forks having the tines pretty close together, and about the size of those in an ordinary manure-fork. The digger puts this fork under the hill, takes up all the potatoes and soil, and turns it over. Then, without stopping to stoop down to touch the potatoes with his fingers, he lifts or pushes them out of the soil over into the furrow between the rows of potatoes. By going up one row and down the next he throws the potatoes from the two rows into one furrow. After they are dug, one horse pulls a small light stoneboat between the rows of dug potatoes. This stoneboat contains two rows of potato-boxes. Two men pick the potatoes from the ground and throw them into the boxes as they stand on the boat. The horse is trained to move along at the word of command, so as to keep the boxes just opposite the potatoes. In this way they do the work very expeditiously.

The doctor was selling very nice Early Ohio potatoes, at the time of my visit, at 25 cts. a bushel, while here in Ohio, at the same time, good table potatoes were bringing 75 cts. A good many things are grown in that beautiful western soil for much less money than we grow them for here at home. In our locality a good many of the late potatoes are extra fine and large; but no one has succeeded in getting them out of the ground, in our neighborhood, without having them covered with mud; and a good many also let the late potatoes push out of the ground so they first got sunburnt and afterward frosted. Now, the sunburnt or green potatoes are just as good or better for planting, though a great many do not seem to know it; and even the frosted ones can be utilized all right, as I have explained, by cutting off the soft portion, providing you have a variety that will not rot after such treatment. You can tell only by experimenting; and I judge others have discovered this as well as myself, for we have had orders from several parties saying that, if we had any Bovee's or Manum's Enormous that were cut in digging, which we were going to sell for seconds, they would rather have them at the price of seconds than to have small potatoes.

I have not mentioned either of the machines I have tested this season, because I am hardly prepared to give them a recommend under the circumstances, and at the same time I am satisfied that both will do excellent work when the soil is in the right condition; and I confess that it never occurred to me, until after this season's experience, that potatoes might be dug with a fork when it is too wet to dig them with any sort of machine. But in any case if you dig potatoes when the ground is too wet you will have to take along a lot of clay and mud; and if there is no chance for drying the potatoes in the field, you will have to dry them by some means pretty promptly in the cellar. A neighbor suggested building a fire; and, in fact, we tried the same thing with some steam-pipes that passed through one end of our cellar, but I do not think heating will answer at all. It just makes them rot. Give them all the air you can in order to dry them out, but let the air be just as cold as possible, and not freeze them. Our slatted potato-boxes are not only a convenience but a necessity in handling and drying out potatoes under such circumstances. We have now in our cellar over 1000 bushels, all safe so far as dampness is concerned.

A REMEDY FOR THE RECENT TROUBLES IN HAVING WHEAT FALL DOWN.

If Mr. Root will sow some mustard with his wheat where it is on such rich ground, it will keep the wheat from falling down. I have seen it tried here close to the city on garden lots this year, with perfect success. I do not know how much seed was sown to the acre; but for best results it ought to have one stalk to each square foot of ground. W. A. MOORE.
Taylorsville, Utah, Oct. 8.

Friend M., no doubt the strong branching stalks of the mustard will hold the wheat up; but one stalk to each square foot would give a pretty fair crop of mustard, to say nothing about the wheat. Would it not cut short the wheat crop? You see this would come in nicely for the bee-keeper; and the mustard seed could be so readily separated from the wheat that there will be no danger of any being left in the wheat if used for seed. But how about getting mustard into the ground? It strikes me that the mustard seed should be sown broadcast at such a time that none of it would ripen and fall out on the ground before wheat is harvested.

SHEEP EATING SWEET CLOVER.

I see in last GLEANINGS that Mr. Sawyer is giving you a pretty hard going-over about sweet clover. Tell him we have had it growing in our place for 16 or 18 years, and it only just about keeps going, and we have favored it to keep it growing, in black prairie soil at that. If Mr. Sawyer will spend his $50.00 in a small flock of sheep, and let them tend his sweet clover, I do not think it will hurt his land or the sheep either. Ours eat it greedily. H. C. SEARS.
Thornburg, Iowa, Dec. 8.

Thanks for the above item, friend S., to the effect that sheep also will eat sweet clover. My impression is they would not have to be "taught" to any great extent. While I dictate this our good friend J. E. Crane, of Middlebury, Vt., is with us, and he says his horses eat sweet clover without any "coaxing" at all. In fact, he says they beg for it when going along the roadside.

APIS DORSATA AND THE PHILIPPINE ISLANDS.

I clip the following from a recent number of the *American Cultivator*:

GIANT EAST-INDIA BEES.

One of our acquisitions with the Philippine Islands is likely to be a new species of the honey-bee. It is called by naturalists the *Apis dorsata*, and is one-half larger than the American honey-bee, with a much greater capacity for making both wax and honey. In its wild state it builds combs on large forest trees or in clefts of the rocks in the mountains of the island. As it goes up the mountains for a distance of 5000 feet, it is believed that it can be acclimated so as to live in the United States. Mr. Frank Benton, of the Department of Agriculture, went to the Philippines to investigate this new kind of bees. He reports them not to be easily irritated, though, of course, if they do sting, a bee nearly twice as large as the ordinary bee would be a formidable antagonist. But as they take 20 to 30 seconds after they are angered before they can get their stings at work, Mr. Benton thinks they can be easily managed. Unfortunately a swarm which Mr. Benton captured in the jungle died on its passage across the Pacific. Mr. Benton was sick in bed. As no one on board would give the necessary attention, the bees perished. These bees have a wasp-like figure, with orange-colored bands encircling their bodies. The combs its makes are much larger than those made by ordinary bees. If it can be domesticated in hives the hives must be very large ones. In fact, a room would scarcely be too large, and it might accommodate several swarms.

Now, there may be some truth in the above, but certainly there are a lot of mistakes mixed in with the truth. Mr. Benton went originally to the island of Cyprus, in the Mediterranean Sea. Then in pursuit of *Apis dorsata* he went on to India, and then south to the island of Ceylon. But, according to our geography, the Philippines are a very great distance from Ceylon and India, and twice as far from Cyprus. Mr. Benton did not go to the Philippines. I have thought best to copy the above, because just such blundering statements are the ones that go the rounds of the papers.

TENNESSEE AND THE CIGARETTE BUSINESS.

In 1897 the legislature of Tennessee enacted a law making it a misdemeanor to sell cigarettes in that State. A test case went up to the Supreme Court, and here is the decision:

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FARM FOR SALE.

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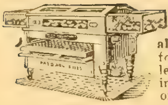

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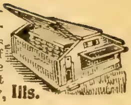

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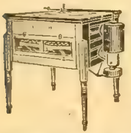

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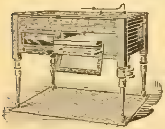

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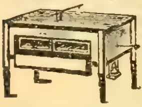

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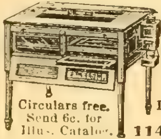

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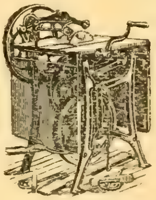

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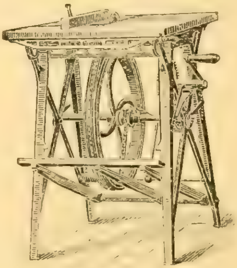

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This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.

W. F. & John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

In writing, mention Gleanings.

Our Great Combination Offer!

The Ohio Farmer and Gleanings in Bee Culture for $1.10.

The *Ohio Farmer* stands in the very front rank of farm papers. It is edited by practical men, and among our exchanges in the agricultural line it is one of the few really good farm papers that we read. Either old or new subscribers may take advantage of this offer; but in the case of an old subscriber the money must be sent in before the subscription expires; or, if already in arrears, all back subscription must be paid up at the regular rates, in addition to the $1.10. Send all orders to

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TWO PAPERS FOR THE PRICE OF ONE

The **FARM JOURNAL**, of Philadelphia, a monthly agricultural journal of 16 pgs., sent **ONE YEAR FREE** for one subscription to **GLEANINGS** with $1.00, paid in advance, either new or renewal. In the case of a renewal, all arrears, if any, must be paid in addition to 1 year in advance.

The Farm Journal is now in its 20th volume, and takes the lead among all the *low-priced* agricultural journals of this country and of the world. It gives no chromos, puffs no swindles, inserts no humbug advertisements, lets other folks praise it, and makes good to subscribers any loss by advertisers who prove to be swindlers. The editor was born on a farm and reared at the plow-handles, and the contributors are practical men and women.

The regular price of this excellent journal is 50 cents a year, and it is well worth it; but by special contract with the **FARM JOURNAL** we are enabled to make the above very liberal offers.

Gleanings in Bee Culture, American Agriculturist (weekly), Farmers' Almanac for 1899,

ALL ONE YEAR ONLY $1.00.

By special arrangement with the publishers, we are enabled to offer the American Agriculturist in combination with Gleanings at the unparalleled low rate of $1.00 for both papers one year including the Farmers' Almanac. The American Agriculturist is published in three editions. The New England Homestead, the American Agriculturist, and the Orange Judd Farmer. Each contains matter relating to its own locality, as well as the latest and most accurate market reports for the country in general. It has departments relating to all branches of farming, articles written by the most practical and successful farmers, supplemented with illustrations by able artists. Short stories, fashions, fancy work, cooking, young folks' page, etc., combine to make a magazine of as much value as most of the special family papers.

A sample copy will be mailed FREE by addressing American Agriculturist, New York, N. Y.

Taken separately these two papers and almanac cost $2.50, consequently every subscriber under this offer will get

$2.50 IN VALUE FOR $1.00.

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PLEASE NOTICE. Our stock of the following has been exhausted, and we are unable to furnish more at present, viz.: Nos. 0, 4, and 5 Beveridge Steam Cookers, Rice-root Brushes, Corn-shellers, Queen-cell and Automatic Knives, and American Typewriters.

THE A. I. ROOT COMPANY.

December 15, 1898.

Another Big Offer!

AS I have explained in previous advertisements, the publisher of a good journal can afford to make liberal offers for the sake of getting his journal into new hands. I have in the past made several such offers; but here is one that I consider especially liberal. If you are not a subscriber to the BEE-KEEPERS' REVIEW, send me ***$1.80,*** and I will have your subscription to Gleanings renewed for one year, send you ***12*** back numbers of the REVIEW, and then the REVIEW for all of ***1899!*** Remember two things: you must be a ***new*** subscriber to the REVIEW, and the order must be sent to

W. Z. HUTCHINSON, Flint, Mich.

In writing advertisers, please mention Gleanings.

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JOSEPH NYSEWANDER, Des Moines, Iowa.

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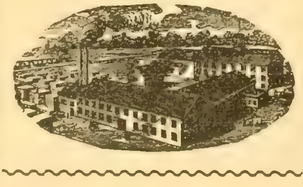

BEE-SUPPLIES.

We have the best-equipped factory in the West. Capacity —one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture **Tanks** of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

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BEESWAX.

We pay 26c per lb. cash, or 28c in trade, for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 32c for *best selected wax*. *Old combs will not be accepted under any consideration.*

Unless you put your name *on the box*, and notify us by mail of amount sent, we can not hold ourselves responsible for mistakes. It will not pay as a general thing to send wax by *express*.

CATALOG FOR 1899.

As usual at this season of the year, our press is unusually busy, and running away into the night to do the printing required. We are printing 120 thousand 24-page catalogs for A. T. Cook, Hyde Park, N. Y., besides 25 thousand other little booklets; 8 thousand catalogs for J. M Jenkins, Wetumpka, Ala.; and 10 thousand catalogs for C. N. Flansburg, Leslie, Mich.

Our own catalog is in preparation; but owing to the fact that our attention has been for the past two or three months confined to factory improvements we shall not have the catalog ready for distribution as early as we hoped to have. It will be at least the middle of January before we have any completed, and Feb. 1st before we have a large number ready to mail. We have the wrappers for almost our entire list all addressed, and ready to roll up the catalogs in as soon as they are ready. Do not write for a catalog before Feb. 1st, unless you want an old one. You will receive a copy just as soon as they are ready to mail.

FACTORY RUNNING AGAIN.

It gives us no little satisfaction to say that, after five weeks lost in general overhauling in our factory, we are running again on full time. All the machines throughout our entire plant, including an elevator in the warehouse and a pump some twenty rods distant, are now run with one large engine, by means of electric transmission for the power required at distant points. The cards from this engine show about 240 horse-power being used, and we have still to hitch on a 60 horse-power motor for new machinery not yet started, in the new addition. When we get our new rooms fully occupied, and the machines running, we shall be using close to 300 horse power.

We have a good supply of orders booked; in fact, the orders are already coming in faster than we can fill them, so that the outlook for business the coming season was never better at this time of year than it is now. If the demand continues at the rate it has started in we shall have to put on double turn much earlier than last year, in spite of our increased facilities and large stock of goods already prepared for shipment.

Special Notices by A. I. Root.

VERY SMALL POTATOES.

In picking up high-priced potatoes, such as the Bovee and Triumph, and several other kinds, we let the boys pick up all the little ones, even down to the size of a hickorynut. These we offer for sale as thirds, and they are only half the price of the seconds. These little potatoes are all perfect, no scabby nor cut ones; and if you will give them a chance they will furnish large fine potatoes the next season; but they require better soil and a longer season to grow in. Where it is a long distance to send for potatoes, and you want only a few by mail to start with, I would recommend these thirds. At the present writing, Dec. 12, we have sorted out only three kinds—Triumph, Freeman, and Bovee.

VALUABLE CHRISTMAS PRESENTS FOR A VERY SMALL SUM OF MONEY.

Any one who will send us $1.00 for GLEANINGS, and pay up all arrearages, may have for a Christmas present any one of the three following books:

1. *Pilgrim's Progress*—a large nice book of 384 pages, full of illustrations. The book is well worth a dollar.
2. *Domestic Economy*, a dollar book written by a doctor; in fact, it is quite a doctor book. We have a large stock of them, and that is the reason we are giving them away.
3. *The New Agriculture; or, the Waters Led Captive.* This is a $1.50 book. While there is much in it that is good, I believe that father Cole's dreams of a "new earth" through sub-irrigation were not fully realized.

Now, if you do not want any of the three books mentioned above, we will allow you 50 cts. on any other book in our list for every dollar that you send for GLEANINGS after paying up all back dues. Besides the books we have quite a lot of Waterbury watches, and some of other kinds; also opera-glasses, telescopes, microscopes, carpet-sweepers, coffee-mills, and things we have usually advertised, and we will allow you on any of these 50 cts. for every dollar sent us for GLEANINGS as above. We have also a lot of Gospel Hymns, from 5 to 75 cts. each; 50 cts. worth of these for every dollar you send for GLEANINGS as above—see book-list page 944, this issue.

THE HOME PAPERS OF LAST ISSUE.

In response to my request to be notified in regard to things not right, and that our company seemed dilatory about making right, I have received just two letters. This is rather consoling to myself and to the younger members of our firm. Things have been bad during the past season, doubtless, but not so *awfully* bad as I feared might be the case when I wrote that Home Paper. Well, one of the two parties had been asked to state just how much would make his loss satisfactory; but for some reason he has not sent in any bill for damages, and our people were rather waiting for him to do so. The other was one of the kindest and most Christianlike letters I have ever received in my life. The writer said he had never sent in any bill for damages, nor even written a complaint, because he had neglected to examine his goods till it was so late he thought he would let it drop. Now. friends, although you may not have discovered the defect immediately on receipt of the goods, I should still like to hear from you in regard to any thing not as it should be. If a bill for damages is to be sent in, we very much prefer that it should come inside of ten days after the receipt of the goods, according to the usual custom; but we do not propose that any arbitrary or iron-clad rules shall ever be held by our firm as an excuse for injustice.

As I have said, there have been received just two letters of complaint; and I should also say, in justice to ourselves, that there have been great numbers who felt moved by that article to tell how greatly pleased they were with our goods, especially the new and improved appliances we have been getting out particularly for honey-producers.

Just one point more: The words of complaint in one of the two letters were from a customer who sent us an order wherein nearly every item called for odd-sized goods. This order came during the great rush of business when every thing was pushing, night and day. Now, to make these odd-sized goods we were obliged to go to a man who did our regular work, and who understoood perfectly the requirements of the regular work, but who had not the skill or knowledge to make some *new* thing. His machine had to be adjusted differently, and he had to be taught a new trade, as it were. Some competent man had to read the letter and get hold of the new thing that was wanted, so there would be no mistake. Last season, during the rush, we absolutely could not find competent men to take hold of orders for odd-sized fixtures.* There were plenty who would go ahead on regular goods that we make day after day. Of course, we are responsible, because we should not have undertaken that which we were unable to do properly. But with the great rush it might have been a week or ten days before the regular clerk would reach the odd-sized order; and then to tell our customer that we should have to decline it might do him much danage by the delay. We were at fault, I admit. But let me suggest that orders for odd-sized stuff be sent in at some other time than during the great rush. I hope our regular goods, such as we advertise, have been generally of good workmanship, and satisfactory in every way.

---

*Some years ago a manufacturer of apiarian supplies stated plainly in his catalog that he would not undertake to make odd sized hives or fixtures, during the rush of business, unless an actual sample of just what was wanted was furnished for the workman to work by.

Books for Bee-keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, postpaid on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the book-seller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. We very much desire that those who favor us with their patronage shall not be disappointed and therefore we are going to try to prevent it by mentioning all the faults, so far as we can, that the purchaser may know what he is getting. In the following list, books that we approve we have marked with a *; those we especially approve, ** ; those that are not up to times, † ; books that contain but little matter for the price, large type, and much space between the lines, ‡ ; foreign, ₰. The bee-books are all good.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

Postage.]		[Price without postage.
8	Bible, good print, neatly bound	20
10	Bunyan's Pilgrim's Progress**	50
20	Illustrated Pilgrim's Progress**	75

This is a large book of 425 pages, and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25 cents more.

6	First Steps for Little Feet	50

By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound and fully illustrated.

3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated, Nos. 1, 2, 3, and 4, words only; cloth, 10c; paper	5
2	Same, board covers	20
5	Same, words and music, small type, board cov.	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
5	Robinson Crusoe, paper cover	10
4	Stepping Heavenward**	18
15	Story of the Bible**	1 00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

	"The Life of Trust," by Geo. Muller**	1 25
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

15	A B C of Bee Culture, cloth	1 10
	Advanced Bee Culture, by W. Z. Hutchinson	50
3	Amateur Bee-keeper, by J. W. Rouse	22
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I., ₰	2 36
21	Same, Vol. II., ₰	2 79
	Same, Vols. I. and II., postpaid	5 25
10	Bees and Honey, by T. G. Newman	90
10	Cook's New Manual, cloth	1 15
5	Doolittle on Queen-rearing	95
2	Dzierzon Theory	10
3	Foul Brood; Its Natural History and Rational Treatment	22
1	Honey as Food and Medicine	05
15	Langstroth Revised. by Chas. Dadant & Son	1 10
15	Quinby's New Bee-keeping	1 40
	Thirty Years Among the Bees, by H Alley	50
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey-bee, by Thos. William Cowan	95
	British Bee-keeper's Guide-book, by Thomas William Cowan, England ₰	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND BOOKS.

5	An Egg farm, Stoddard **	40
5	A B C of Carp Culture, by Geo. Finley	25
5	A B C of Strawberry Culture,** by T. B. Terry	35

Probably the leading book of the world on strawberries.

3	A B C of Potato Culture, Terry **	35

This is T. B. Terry's first and most masterly work.

	Barn Plans and Out-buildings*	1 50
	Canary birds, paper	50
2	Celery for Profit, by T. Greiner**	25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.

15	Draining for Profit and Health, Warring	1 35
10	Fuller's Grape Culturist **	1 15
8	Domestic Economy, by I. H. Mayer, M D.**	30

This book ought to save at least the money it costs, each year, in every household. It was written by a doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is $1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

10	Farming for Boys*	1 15

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7	Farm, Gardening, and Seed-growing**	90
12	Gardening for Pleasure, Henderson*	1 35
12	Gardening for Profit**	1 35
8	Gardening for Young and Old, Harris**	1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground ; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10	Greenhouse construction, by Prof, Taft**	1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

15	How to Make the Garden Pay**	1 35
5	Garden and Farm Topics, Henderson**	60
	Gray's School and Field Book of Botany	1 80
5	Gregory on Cabbages, paper*	20
5	Gregory on Squashes, paper*	20
5	Gregory on Onions, paper*	20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

	Handbook for Lumbermen	05
10	Household Conveniences	1 40
2	How to Propagate and Grow Fruit, Green*	15
10	How to Get Well and Keep Well	90

An exposition of the Salisbury system of curing disease by the "lean-meat diet."

2	Injurious Insects, Cook	10
10	Irrigation for the Farm, Garden, and Orchard*	1 10

By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

7	Market-gardening and Farm Notes	75

This is by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drouth threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

3	Maple Sugar and the Sugar-bush**	32
4	Peabody's Webster's Dictionary	10

Over 30,000 words and 250 illustrations.

5	Manures ; How to Make and How to Use Them ; in paper covers	30
6	The same in cloth covers	65
3	Onions for Profit**	40

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

	Our Farming, by T. B. Terry**	1 50

In which he tells "how we have made a run-down farm bring both profit and pleasure."

This is a large book, 6x9 inches, 367 pages, quite fully illustrated. It is Terry's first large book; and while it touches on the topics treated in his smaller handbooks, it is sufficiently different so that no one will complain of repetition, even if he has read all of Terry's little books. I should call it the brightest and most practical book on farming, before the world at the present day. The price is $2.00 postpaid, but we have made arrangements to furnish it for only $1.50.

We are so sure it will be worth many times its cost that we are not afraid to offer to take it back if any one feels he has not got his money's worth after he has read it. If ordered by express or freight with other goods, 10c less.

1	Poultry for Pleasure and Profit.**	10
8	Practical Floriculture, Henderson.*	1 10
10	Profits in Poultry.*	75
2	Practical Turkey-raising	10

By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

2	Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character.**	15
1	Silk and the Silkworm	10
10	Small-Fruit Culturist, Fuller	1 10
10	Success in Market-Gardening*	90
10	Talks on Manures*	1 35
7	Ten Acres Enough	75
2	The Carpenter's Steel Square and its Uses	15
10	The New Agriculture; or, the Waters Led Captive (a $1.50 book)	40
2	Treatise on the Horse and his Diseases	10
5	Tile Drainage, by W. I. Chamberlain	35

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, Ohio.

3	Tomato Culture	35
3	Vegetables under Glass, by H. A. Dreer**	20
3	Winter Care of Horses and Cattle	25

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.

3	Wood's Common Objects of the Microscope**	47
8	What to Do and How to be Happy While doing It, by A. I. Root	42

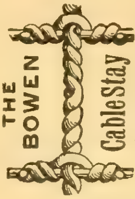
The A. I. Root Co., Medina, O.

CONVENTION NOTICES.

The Michigan bee-keepers will hold their annual convention in Reed City, Dec. 30, 31, at the King hotel.
W. Z. HUTCHINSON, Sec.

Colorado bee-keepers who desire to attend a meeting of those interested in forming an association for marketing honey are requested to send their addresses to the undersigned, in order that due notice may be sent them. This meeting will be held in Denver, Tuesday, Jan. 3, 1899, at 10 A.M. The exact place is not yet determined.
F. L. THOMPSON,
Sec. of committee for forming a constitution and by-laws.
825 23d Ave., Denver, Colo., Dec. 5, 1898.

The California Bee-keepers' Association will hold its annual convention in Los Angeles in January, providing we have good rains, and the president, C. A. Hatch, and treasurer, J. H. Martin, can be found. When last heard from the president was in Arizona and the treasurer in Oregon. We could make another president, but the treasurer has all the money, and we can't make money in a year like this; so any information leading to their capture and return will be thankfully received.
J. F. MCINTYRE, Sec.
Sespe, Cal., Nov. 14.



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Root's Goods at Root's Prices.
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A beautiful present with every order. Cheapest place in Michigan to buy your SUPPLIES. Send for a price list explaining.
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Dovetailed Hives,
Sections, Extractors, Smokers, and every thing a bee-keeper wants. **Honest goods at close honest prices.** 60-page catalog free.
J. M. JENKINS, Wetumpka, Ala.
In writing, mention GLEANINGS.

Wants and Exchange.

WANTED.—To exchange a Mann green-bone cutter, No. 6, for honey, bee-fixtures, or offers.
A. W. CARSON, Joplin, Mo.

WANTED.—To sell or exchange one female bloodhound, 4 years old, fully trained, with good record. Also one dog pup 5 months old. Address at once
R. GOLLING, Lenoir City, Loudon Co., Tenn.

WANTED.—Young man who does not use liquors or tobacco to work the coming season on farm where honey, fruits, and general farm crops are raised. Give references.
C. J. BALDRIDGE, Kendaia, N. Y.

WANTED.—Your address for a free copy of my book on queen-rearing.
HENRY ALLEY, Wenham, Mass.

WANTED.—Position in apiary for season of 1899. Fifteen years' experience. Also want camera complete for Barnes saw.
M. W. SHEPHERD,
Mannville, Putnam Co., Fla.

WANTED.—To do gunsmith work in exchange for bee-supplies or cash. My specialty is making new muzzle-loading rifles, and restocking all kinds of guns. Broken parts can be sent cheaply by mail. Correspondence answered.
S. B. POST,
R. D. No. 2, Washington, Pa.

WANTED.—No. 1 white comb honey in 4x5-inch sections; also to furnish my hives and 4x5 sections for a share of the next honey crop, to parties within 100 miles of this city. Address *at once*
F. DANZENBAKER, Washington, D. C.

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